JANUARY/FEBRUARY 1995

PRACTICAL WINERY & VINEYARD

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10 Field performance of Chardonnay Clones

15 Cork quality assurance sampling

29 Sangiovese—no limit to variations

Focus on Oak
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VOL. XV, NO. 5

JANUARY / FEBRUARY 1995

WINERY & VINEYARD

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EDITORIAL
CIRCULATION
ADVERTISING

15 Grande Paseo,
San Rafael, CA
94903-1534
415/479-5819

PUBLISHER
EDITOR
Don Neel

ASSOCIATE
PUBLISHER
Carol Caldwell-Ewart

ART
DIRECTOR
Diane Cobb

CONTRIBUTING
EDITORS
Eleanor Heald
Ray Heald
Carol Shelton
Carole Taines
Ed Weber
Bruce Zoecklein

CONTRIBUTING
WRITERS
Ken Arthur
R. Corbin Houchins
Millie Howie
Jay Conrad Levinson
Jake Lorenzo
George Schofield
Dr. Wells Shoemaker
Dr. Richard Smart
Rhoda Stewart
David Storm

ADVERTISING
REPRESENTATIVES
Wettstein, Nowell
& Johnson, Inc.
415/472-5400

PRACTICAL WINERY & VINEYARD (ISSN 9739-8077) is owned and published by D.F. Neel. Published bi-monthly at subscription rate of $30/year. Outside the United States, please add $8US, sea mail; $16US, air mail. Application to Mail at Second-Class Postage Rates is Pending at San Rafael, CA. Postmaster: Please send change of address to 15 Grande Paseo, San Rafael, CA 94903. Back issues: $5 prepaid. News media may use no more that 1/4 page of material per issue provided that PRACTICAL WINERY & VINEYARD is credited.

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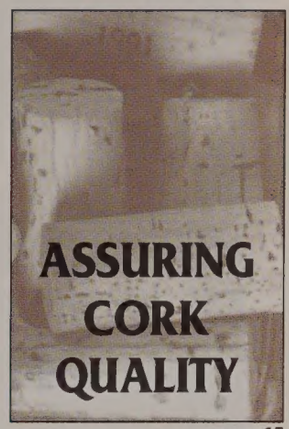

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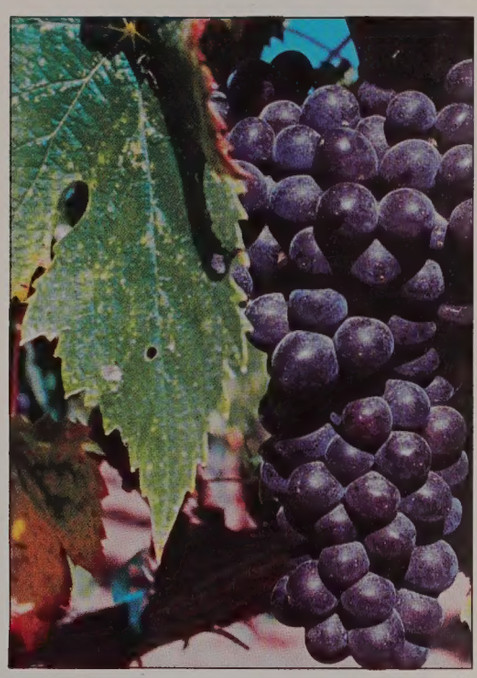

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Cover: **Cooperage tools** (Photo provided by Tonnellerie Radoux)

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Map-oriented marketing materials are available

Buttitta Design (a Sonoma County, CA graphic design firm), recently prepared a series of 12 maps for Kendall-Jackson Winery. The maps, which depict "flavor domaines" and "climatic zones" were created with Adobe Illustrator software for conversion directly to 35mm slides to be used in educational and marketing presentations.

Buttitta Design managed all the research and interpretation, organization of information, and development of color and type elements necessary for the computer-illustrated maps and map key icons.

In addition, Buttitta Design has created many other types of maps for the wine industry including a large format full-color map and brochure for the Napa Valley Vinters Association, and two-color maps for Cain Vineyard & Winery, and Sterling Vineyards.

Buttitta Design is located at 132 Matheson St., Healdsburg, CA. For more information, call 707/431-1257

Euro-Machines goes west!

The Scharfenberger Company of Germany (manufacturer of the Europress) has operated a wholly-owned subsidiary on the east coast of the United States since 1985. Euro-Machines, Inc. takes its name from the grape press it represents and the fact that it offers a large range of vineyard and winery equipment.

The east coast-U.S. subsidiary provided positive results in customer satisfaction. This led to a second office on the west coast, replacing Process Engineers as the Europress distributor. A 6,000-sq.ft. office and warehouse in San Jose, CA was opened November 15, 1994.

Being exclusively dedicated to the wine industry, Euro-Machines, Inc. looks forward to serving your vineyard and winery equipment needs and hopes you will give them the opportunity to show you their commitment.

The staff includes Peter Appelrath, Gabriel Heredia (formerly of Process Engineers), Matt and Karen Eiser. With direct support from the factory and their experience with the Europress, you are assured that Euro-Machines vineyard and winery equipment will be there when you need them.

The staff would be happy to see you at the WineTECH'95 Show in Sacramento, CA at booth#530. If you cannot attend, please do not hesitate to call the offices with any questions regarding your Europress or other equipment needs: West Coast, San Jose, CA tel: 408/452-7600; East Coast, Culpeper, VA tel: 703/825-5700.

Canton barrels available direct from cooperage

Canton Cooperage American oak wine barrels may now be purchased directly from the cooperage. With this change, Canton is pleased to have Ken Seymour continue as sales representative. For barrel orders or questions, contact Seymour at 1-800-692-9888.

Canton barrels were previously represented by Cork Associates, Barrel Division, and Canton Cooperage thanks them for their efforts to make Canton a leading barrel.

Canton Cooperage (located in Lebanon, KY), has produced premium wine barrels with timber from its own mills for over eight years. Barrels are available in the Bordeaux, Burgundy, and Chateau Ferre (thin stave) styles with custom toast levels. The goal of Canton Cooperage is quality and consistency.

Rootstock analysis by isozyme profile

Isozyme profile analysis of grapevines, recently developed by Dr. Andrew Walker and Dr. Linda Liu (UC Davis), has been adapted by Agri-Analysis (Davis, CA) to compare and contrast unknown rootstock tissue samples to known rootstock varieties.

This procedure can distinguish between the 60 different varieties of rootstock by comparing the patterns developed after electrophoresis separation of specific enzymes active in prepared cambial tissue samples.

Isozyme analysis is different from DNA "fingerprinting" in that enzymes are the product of the genetic information coded in the DNA message. In this instance, the grapevine rootstock DNA present in each variety will produce subtly different forms of the same enzyme. These forms differ slightly in the way in which they are folded, in the nature and type of surface charges, and in their response to gradations in pH during electrophoresis.

The type of patterns produced by the different forms of the same enzyme (isozyme) are permanently recorded in the polyacrylamide gel used for separation. By comparing the patterns developed by up to seven different types of enzymes to known standard rootstock varieties, it is possible to definitively establish that a given unknown sample does or does not have the same isozyme pattern as a known standard variety.

The information developed by this procedure will be of use to nurseries, growers, agricultural consultants, and real estate agents in diagnosing vineyard problems, and in verifying "trueness-to-type."

For more information call: Agri-Analysis Associates, 916/757-4656.

1994 Sitevinitech wine/viticulture show

From Nov. 29-Dec. 2, 1994, 44,000 visitors saw 950 exhibits in 16 acres of covered exhibition in Bordeaux, France. About 30 Americans attended.

The Institut Technique du Vin (I.T.V.) two-day Euroviti Symposium (held simultaneously), included experts from France discussing controlling mildew efficiently and a "Wine & Health" research program.

Innovative Equipment Awards went to: Pellenc model 3200 harvesting machine; Tecnoma "Turbocoll" turbo sprayer; Gregoire gondola membrane dejuicer; Michael Paetzold automatic bottle emptier (uncorker); ATE grape screening belt; Aquitane Bouchage cork control kit; Petitdemange cased-bottle tilter; and Saint-Gobain Emballage slim 500ml Bordeaux-shaped bottle.

Reported by Jacques Recht

New wine culture receives international award

Chris Hansen A/S received a Most Innovative Food Ingredient Award 1994 for Viniflora Oenos™ during the Food Ingredients Europe 1994 exhibition in London, England, October 4-6, 1994.

Viniflora Oenos™ is a result of close cooperation between Hansen and wine institutes in France, Italy, and Portugal within the framework of the EU research program ECLAIR, with Professor Aline Lonvaud of the oenological institute in Bordeaux as one of the initiators.

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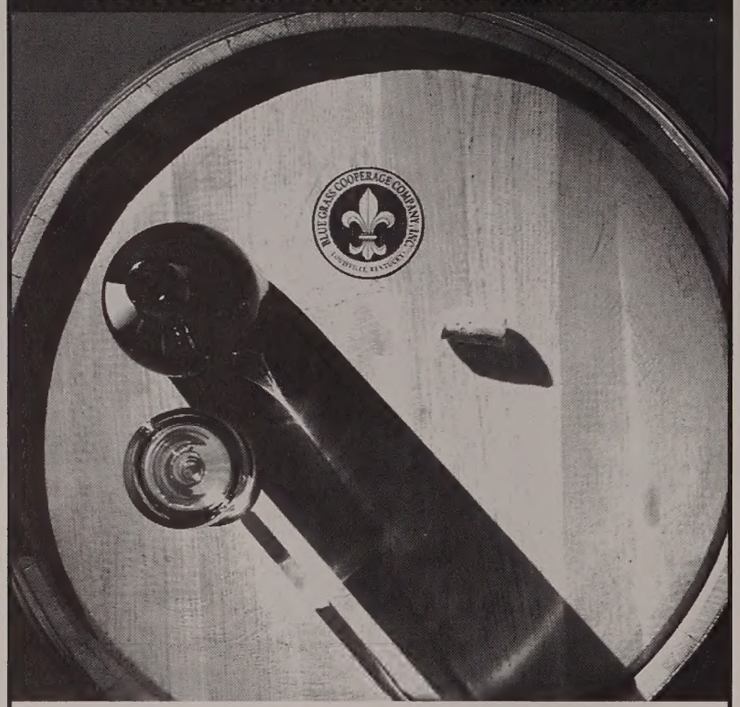

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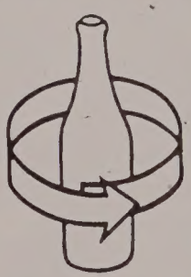

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CALENDAR

Jan 17-19, Tuesday-Thursday

Unified Wine Grape Industry Symposium

Focus on wine and grape marketing, enology, viticulture and social issues; industry exhibits; all-industry banquet; wine receptions; annual meeting of California Assoc. of Winegrape Growers (CAWG). Sponsored by ASEV, CAWG, and WITS in cooperation with American Vintners Assoc., CSU-Fresno, Family Winemakers of California, UC-Davis, and Wine Institute.

Location: Sacramento Radisson Hotel. **Contact:** 916/752-1915, fax: 916/752-7117.

Jan. 22-24, Sunday-Tuesday

10th Annual Midwest Regional Grape & Wine Conference

Pre-conference seminar sponsored by World Cooperage focuses on various aspects of cooperage and a tasting. Viticulture, Enology, and Marketing sessions feature speakers from California, Michigan, Ohio, and Washington. Trade show;, wine tasting;, champagne reception; five-course and ten-wine banquet.

Location: Marriott's Tan-Tar-A Resort, Lake Ozark, MO. **Contact:** Missouri Grape & Wine Program, 800/392-WINE or 314/751-3374.

Feb. 19-21, Sunday-Tuesday

23rd Ohio Grape-Wine Short Course

Two concurrent round table discussions on enology/marketing, Sunday. Technical sessions with industry/university speakers cover current topics/future trends in viticulture, enology, and marketing Monday/Tuesday.

Location: Holiday Inn, Middleburg Heights/Cleveland, 7230 Engle Rd., Middleburg Heights, OH. **Contact:** Roland Riesen or Judy Stetson, OSU/OARDC, Dept. of Horticulture & Crop Science, Wooster, OH 44691, tel: 216/263-3814, fax: 216/263-3685. For exhibits/marketing, contact: Donniella Winchell, Ohio Wine Producers Assn., 822 N.Tote Rd., Austinburg, OH 44010, tel: 216/466-4417, fax: 216/466-4427.

March 4-5, Saturday-Sunday

Indiana Winegrowers Guild Symposium

Speakers on Image building, Winery management issues, Enology functions/equipment. Sunday speakers from Purdue University and Indiana Wine Grape Council.

Location: Seasons Lodge, Nashville, Ind., about one hour south of Indianapolis. **Registration:** $35 for first person, $30 for additional registrants to workshops, lunch, and tastings. **Contact:** Jim Butler, Butler Winery, 1022 N.College Ave., Bloomington, IN 47404, tel: 812/339-7233.

March 21-22, Tuesday-Wednesday

Organic Viticulture Symposium

Group of Cornell researchers and organic and conventional grape growers will report on five-year study of feasibility of organic wine and juice grape production in New York. Other speakers from organic producer communities in eastern U.S., California, and France will share experiences also.

Location: NY State Ag. Experiment Station, Cornell University, Geneva, NY. **Contact:** Judy Robinson, Dept. of Hort. Sciences, NYSAES, Geneva, NY 14456, tel: 315/787-2238, fax: 315/787-2216.

CALENDAR

March 22-23, Wednesday-Thursday
New York Wine Industry Workshop

Focus on New York varietal wines by region: Winemaking and terroir/flavor differences; Does native yeast express regional wine character better than selected starter culture? Characteristics of selected yeast strains.

Location: NY State Ag. Experiment Station, Cornell University, Geneva, NY. **Contact:** Dr. Thomas Henick-Kling, Dept. of Food Science & Technology, NYSAES, Geneva, NY 14456, tel: 315/787-2277, fax: 315/787-2397.

May 20-25, Saturday-Thursday
Intervitis/Interfructa'95

International exhibition of wine and fruit-growing techniques, processing, enology, bottling and packaging techniques and 55th German Viticulture Congress.

Location: Stuttgart, Germany. See ad ➡

June 20-21, Tuesday-Wednesday
International Symposium on Clonal Selection

Location: Portland, OR. **Contact:** J.A. Wolpert, Dept. of Viticulture & Enology, U.C. Davis 95616 (fax: 916/752-0382)

June 22-24, Thursday-Saturday
American Society for Enology & Viticulture Annual Meeting

Location: Portland, OR. **Contact:** ASEV, PO Box 1855, Davis, CA 95617 (tel: 916/753-3142, fax: 916/753-3318)

July 16-19, Sunday-Wednesday
9th Australian Wine Industry Technical Conference

Eight forums: Vineyard resource management; Winemaking grapegrowing interface — flavor; Winemaking grapegrowing interface — quality assessment; Vine management; Winemaking — fermentation; Winemaking — finishing; Customer expectations; Product presentation. Speakers from Australia, California, France, Italy, Oregon, South Africa, Spain.

Location: Adelaide Convention Center, South Australia **Contact:** Australian Wine Industry Technical Conference, PO Box 197, Glen Osmond, SA 5064, tel: 011-61-8-379-1111, fax: 011-61-8-379-0666.

July 19-20, Wednesday-Thursday
Alternative Winegrape Varieties Symposium and
Annual Meeting of ASEV/Eastern section (July 21-22)

Focus on varieties that have regional importance because of disease resistance, cold hardiness, etc. including: Chardonel, Malvasia bianca, Marsanne, Muscat Ottonel, Nebbiolo, Norton/Cynthiana, Sangiovese, Viognier. Speakers from California, Michigan, Missouri, New York, Virginia, and Italy.

Location: Charlottesville, VA. **Contact:** Dr. Tony Wolf, Virginia Ag.Res.&Ext. Center, 595 Laurel Grove Rd., Winchester, VA 22602 tel: 703/869-2560, fax: 703/869-0862.

July 17-21, 1996
4th International Symposium: Cool Climate Viticulture/Enology
and **Annual Meeting of ASEV/Eastern section**

Symposium applies current viticulture and winemaking technologies to maximize wine quality with a focus on cool climate technologies. Seminars, workshops, regional presentations, trade exhibition, tours, poster session, wine theme lunches/dinners.

Location: Rochester, NY. **Contact:** ASEV/ES, Dept. of Food Science & Technology, NYS Ag. Exper. Station, Geneva, NY 14456-0462 fax: 315/787-2397.

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2. Processing, enology, bottling and packaging techniques
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by James Wolpert, Amand Kasimatis, Ed Weber

Authors are, respectively, Viticulture Extension Specialist and Specialist Emeritus in the Dept. of Viticulture & Enology, University of California, Davis, and Farm Advisor, University of California Cooperative Extension, Napa County.

The authors thank E.P. Vilas, Jr. and S. Gallagher for valuable technical support, and acknowledge the assistance of K. Bowers in the establishment of research trials. The superb cooperation of vineyard managers Doug Hill, of Jaeger Vineyards, and Jim Frisinger, Drew Johnson, and Bob Steinhauer, of Beringer Vineyards is gratefully acknowledged. The authors also thank the American Vineyard Foundation for financial support.

NAPA VALLEY

Field performance of six *Chardonnay* clonal selections

Introduction

Chardonnay is recognized as one of the finest white winegrape varieties in the world. It is the primary variety used in the French white wines of Burgundy, Chablis, and Champagne. Chardonnay is also grown in other European countries, and is widely used in Australia, New Zealand, Chile, and U.S. for production of high quality table wine.

In California, Chardonnay was present before the turn of the century but was not widely produced as a varietal wine. H.P. Olmo cites Wiley's report that no Chardonnay wines from California were among those entered in the 1900 Paris Exposition.[7,11] Gerald Asher traced the history of the variety in California, and reported that only two commercial Chardonnay vineyards survived Prohibition.[2] One of these, the Wente Brothers Vineyard in Livermore, was responsible for much of the budwood used for later vineyard expansion in the state.

In 1960, California plantings of Chardonnay were estimated at only 150 acres.[1] Lack of interest in the variety can be attributed, in part, to the fact that available selections were often extraordinarily low in yield (one to two tons/acre). While viruses were responsible for some of the low yield effect, Austin Goheen (personal communication) determined, by field indexing, that one particularly low-yielding selection was free of detectable viruses.

Between 1970 and 1980, Chardonnay acreage in California quadrupled, increasing from 2,700 to more than 11,000.[10] By 1988, it had quadrupled again, reaching 45,000 acres. By 1992, California had more than 59,000 acres of Chardonnay, placing it first among all wine cultivars, white or red. The increase is projected to continue and may reach 75,000 acres by 1997.[8] The dramatic increase in recent years can be attributed in large measure to improved yields resulting from successful clonal selection.

H. P. Olmo, professor in the Dept. of Viticulture & Enology, U.C. Davis, began clonal selection of Chardonnay in the late 1950s. Previously, Louis P. Martini of the Louis M. Martini Winery, St. Helena, CA, had selected clones from F. McCrea's Stony Hill vineyard in Napa County, which had originated as a mass selection from Wente Brothers.

After preliminary experiments in the Martini vineyard, Olmo took advanced selections to the Oakville Experimental Vineyard of UC Davis. There he compared the Martini selections to imported ones: one clone chosen by Olmo in Mersault, France, in 1951, and two selections provided by Prof. M. Sick from Colmar, France. Olmo (unpublished data) reported that the advanced Martini selections included in these trials yielded as much as five tons/acre, two to three tons/acre more than the imported selections. Recently, Chardonnay clonal research trials in Australia have shown FPMS (Foundation Plant Materials Service, University of California) selections to be among the higher yielding clones tested.[4,5,6]

The value of clonal selection had been challenged in California since the work of F.T. Bioletti on the variety Muscat of Alexandria.[3] He found that selections displaying high-yielding or low-yielding characteristics in vineyards did not maintain those attributes when moved by propagation into a carefully controlled experiment.

Other anecdotal experience, both foreign and domestic, implied that "clonal" differences were lost when selections were freed from deleterious viruses. However, the Olmo experiments showed that significant differences could be identified among clones testing free of virus, implying that these differences were genetically-based and stable. A number of investigators have since identified clonal differences including yield, cluster weight, berry weight, fruit maturity, and wine characteristics.

The purpose of our research was to viticulturally evaluate six Chardonnay clones and to document any differences in clonal performance between two sites in the Napa Valley.

Materials and methods

Experiments were established at the time of planting in two commercial vineyards. The Jaeger Vineyards trial was planted in 1984 in a site about three miles north of the city of Napa. Vines were spaced 8-ft x 10-ft (vine x row), with 544 vines/acre. Vines were cane-pruned on a two-wire trellis system, usually with two 12-bud canes and about four two-bud spurs per vine. The vineyard was clean-

Table I

Foundation Plant Materials Service (FPMS) clone numbers and sources of Chardonnay tested

FPMS Clone #	Source	Heat treatment (days)
4	Martini 5V21, Olmo #66	90
5	Martini 6V11, Olmo #69	90
6	Martini 3V4, Olmo #68	164
14	Martini 1V20, Olmo #65	111
15	Prosser, WA; LR2V6	173
16	PI 364283, Rutherglen, Australia	60

cultivated in row middles and weeds were controlled in a two-ft. wide strip under the vine row with herbicides.

The second trial was established in 1985 at Beringer Vineyards, one-half mile east of Yountville. Vines were planted 8-ft x 12-ft (vine by row), 454 vines/acre. Vines were trained to a bilateral cordon on a "T" trellis and spur-pruned to about 18 two-bud spurs/vine. The vineyard was clean-cultivated by means of discing the row middles, while spring hoe plowing was used to clean weeds from under vine rows.

The two vineyards were separated by about five miles. Temperature records from the nearest thermograph station indicate that Jaeger Vineyards was the cooler site. For the three years of the experiment (1989-1991), Jaeger averaged 2,962 degree days (base 50°F) while Beringer averaged 3,422 degree days.

Rainfall was typically about 32 inches/year, the majority of which fell in the winter months of November through March. Overhead sprinkler systems were used to irrigate in both trials and total applied water averaged about three inches in the Jaeger trial and about seven inches in the Beringer trial. The soil type at both sites is characterized as a Yolo loam.

The trials were established with spring plantings of certified AXR#1 rootings which were field-budded in late summer of the same year. Both trials were designed as randomized complete blocks with ten-vine experimental units and four replications. At least two guard rows and two end-of-row guard vines were employed. Each trial was located within a Chardonnay vineyard block and cultural practices were those of a typical Napa Valley commercial Chardonnay vineyard. Cluster thinning was not practiced in either trial. In the Beringer trial, pre-bloom shoot thinning was done in order to remove shoots from latent buds.

Budwood of the clones chosen for study was taken from certified, virus-tested vines grown at FPMS, U.C. Davis (Table I). Only clones testing free of virus were used, in order to ensure that observed differences in the parameters measured were genetic and not due to the presence of one or more viruses.

When multiple selections of a clone were available, differing only in the duration of heat treatment, the selection with the greatest days of heat treatment was chosen. Four of the six clones (FPMS 4, 5, 6, and 14) were selected by Louis P. Martini from McCrea's Stony Hill Vineyard and planted in the Carneros region of Napa County. The McCrea Vineyard had originated as a mass selection from Wente Brothers in Livermore Valley. Of the remaining two clones, one was from Washington state and the other from Rutherglen, Australia.

Beginning in 1988 and continuing through 1991, data were taken from both sites (1988 data not shown). Prior to harvest, a single 100-berry sample was taken per ten-vine plot and from it berry weight, °Brix, titratable acidity, and pH were determined. All clones in each trial were harvested on the same date. Trials were hand-harvested on a vine-by-vine basis, clusters were counted and vine yields measured. The yield component berries/cluster was determined by calculation (average cluster weight divided by average berry weight).

During the dormant season, vines were pruned individually. One-year-old cane prunings were separated from old wood and weighed. Pruning weights are reported with the data from the previous growing season, *e.g.* prun-

Table II

Comparison of average pruning weights and yield components of Chardonnay clones at two sites: Beringer Vineyards, Yountville, and Jaeger Vineyards, Napa, (1989-91). B=Beringer J=Jaeger

FPMS #	Pruning wt (lb vine^{-1})		Yield (lb vine^{-1})		Yield: pruning wt ratio		Cluster number (vine^{-1})		Cluster wt (g)		Berries per cluster		Berry wt (g)	
	B	J	B	J	B	J	B	J	B	J	B	J	B	J
4	3.0 e	3.1 e	28.7 a	22.5 b	10.6 a	8.2 b	60 b	54 cd	219 a	203 a	164 a	160 a	1.34 bc	1.25 b
5	3.9 d	3.7 d	28.3 a	25.8 a	8.0 b	7.6 b	62 b	62 ab	206 b	202 a	152 b	157 a	1.36 b	1.29 b
6	6.6 b	6.2 a	26.4 a	20.4 b	4.3 c	3.7 c	73 a	65 a	164 d	150 c	121 c	116 b	1.35 bc	1.29 b
14	2.2 f	2.3 f	23.3 b	20.8 b	11.7 a	9.9 a	56 b	55 bc	189 c	182 b	162 a	164 a	1.17 d	1.11 c
15	7.8 a	5.9 a	20.2 c	20.7 b	2.7 d	3.9 c	71 a	67 a	125 e	144 c	96 d	118 b	1.31 c	1.21 bc
16	5.4 c	4.0 c	10.8 d	9.3 c	2.2 d	3.1 c	49 c	47 d	100 f	94 d	60 e	68 c	1.63 a	1.49 a

Values followed by the same letter are not significantly different (Duncan's Multiple Range Test, $p \leq 0.05$).

Table III

Comparison of average fruit maturity indices of Chardonnay clones at two sites: Beringer Vineyards, Yountville, and Jaeger Vineyards, Napa (1989-91). B=Beringer J=Jaeger

FPMS #	°Brix		Titratable acidity (gram/liter^{-1})		pH	
	B	J	B	J	B	J
4	22.5 c	22.4 b	7.4 a	7.0 a	3.32 d	3.26 e
5	22.6 c	22.2 b	7.5 a	7.1 a	3.34 cd	3.26 e
6	23.4 ab	22.9 a	6.8 cd	6.4 b	3.42 b	3.34 c
14	23.1 b	22.3 b	7.0 c	6.4 b	3.36 c	3.28 d
15	23.1 b	23.0 a	7.2 b	6.4 b	3.43 b	3.37 b
16	23.6 a	23.3 a	6.7 d	6.1 c	3.55 a	3.48 a

Values followed by the same letter are not significantly different (Duncan's Multiple Range Test, $p \leq 0.05$).

ing weights from the 1990-91 dormant season are reported as 1990 data.

Results and discussion

Pruning weights, yield components, and fruit maturity indices are presented as three-year averages for both locations (Tables II and III). In both trials, FPMS-6 and FPMS-15 produced the most cane growth (about six lbs/vine) and FPMS-14 the least (2.2 lbs/vine) (Table II). Relative growth of the clones was consistent in both sites throughout the study.

Yields in both trials were high, averaging as much as 7.0 tons/acre at the Jaeger site and 6.5 tons/acre at the Beringer site. At Jaeger (Table II), FPMS-5 was the highest yielding (25.8 lbs/vine), followed by a group including FPMS-4, FPMS-6, FPMS-14, and FPMS-15 (20.4 to 22.5 lbs). FPMS-16 (9.3 lbs) was by far the lowest yielding clone.

A similar pattern was seen at Beringer where clones FPMS-4, FPMS-5, and FPMS-6 were equally high yielding (26.4 to 28.7 lbs/vine), followed by FPMS-14 and FPMS-15 (20.2 to 23.3 lbs). FPMS-16 was again the lowest-yielding clone at 10.8 lbs.

The yield:pruning wt. ratio (YPR) varied greatly among clones. In both trials, FPMS-14 had the greatest YPR of all clones, 9.9 at Jaeger and 11.7 at Beringer, due to a combination of very low pruning weights and relatively large yields. Moderate YPRs were seen for FPMS-4 and FPMS-5 primarily due to moderate pruning wts. Low YPRs were seen in FPMS-6 and FPMS-15 because their pruning weights were relatively high. FPMS-16, which also had a low YPR, was unusual in that it combined very low yield with moderate pruning weights.

The high YPR for FPMS-14 might raise concern that this clone was over-cropped. However, pruning weights remained constant over three years in both trials, at about 2.2 lbs/vine, indicating that high crop levels were not being achieved at the cost of declining growth. Average fruit maturity indices (Table III) support a conclusion of normal ripening.

However, the low YPRs of FPMS-6 and FPMS-15 were due in large part to the large pruning weights which exceeded a recommended level of 0.4 lbs/ft of row for undivided canopies.[9] For both clones, stable yield and pruning weight values did not indicate an under-cropped vine or excessive shading.

The relationship of yield to pruning weight, cluster number, and cluster weight was examined (data not shown). Yield was more closely correlated with cluster weight than cluster number, probably because cluster weight incorporates both berries/cluster and berry weight. Yield was not correlated with pruning weight, indicating that growth was not significantly affected by crop load in these clones, *i.e.* over- or under-cropping was not occurring, and suggesting that the yield differences were genetic and not cultural.

Despite the great difference in crop load and YPR, fruit maturity indices did not differ greatly (Table III). Typically, fruit of FPMS 16 had the highest °Brix (on average 23.5°) and FPMS 4 and FPMS 5 had the lowest °Brix (on average 22.5°). This difference was likely the result of the significantly lower production of FPMS 16 when compared to 4 and 5, which were among the highest producers.

Titratable acidity followed the same trend in that it was lowest for FPMS 16 and highest in FPMS 4 and FPMS 5. The values for pH were not greatly different except that FPMS 16 was consistently higher in pH, even when compared to clones of comparable maturity.

Summary of clonal attributes

FPMS clones tested in these trials differed in their viticultural characteristics. A detailed comparison follows.

FPMS 4 and **FPMS 5** are the most similar. Both were high-yielding clones with large numbers of heavy clusters, high numbers of berries per cluster, and moderately heavy berries. Both exhibited moderate growth, with FPMS 5 producing about 0.6 to 0.9 lb/vine more dormant prunings than FPMS 4. Both clones could be recommended for growers desiring high yield and for conditions where site and rootstock combinations are expected to result in high vigor.

FPMS 6 is a high-yielding clone. It has as many, or more, clusters than FPMS 4 and 5 but its clusters are about 45 grams lighter, primarily due to about 30 to 40 fewer berries per cluster. FPMS 6 is a vigorous clone; while maintaining high yields, it had high pruning weights. This clone could be recommended for growers desiring high yields and using a divided canopy where the higher pruning weights would be an advantage.

FPMS 14, like FPMS 4 and 5, is a high-yielding clone with moderately high numbers of clusters per vine. Its clusters are somewhat lighter than 4 and 5, primarily because of smaller berries. FPMS 14 differs from the other clones in that it had low pruning weight of just over 2.2 lbs/vine. This clone could be recommended to growers who desire high yields but who also plan a close-spaced vineyard where high vigor would be undesirable.

FPMS 15 is a moderately high to high-yielding clone, depending on the site. Although it has a large number of clusters per vine, the cluster weight is moderate due to significantly fewer berries per cluster and more "shot berries," characteristics which were visu-

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ally apparent. It is important to note that yield in FPMS 15 was more erratic than other clones.

FPMS 16 had a visually distinct cluster which was small, without a wing or well-developed shoulder and with significant numbers of "shot berries" and large berries. The small clusters contributed to the low yield along with fewer clusters per vine. The presence of shot berries contrasts with the large berry weights (Table II). Bias in the sampling process, towards the larger berries, is a likely explanation. Leaves of FPMS 16 also appeared to be darker green, thicker, and had more deeply dentate teeth. Although this clone has been verified as being true to type, it is clearly different from the others.

It should be noted that clones with large numbers of berries per cluster must be cautiously chosen when a vineyard site has a high rot potential. A positive relationship among high numbers of berries/cluster, tight cluster architecture and rot has been found. ■

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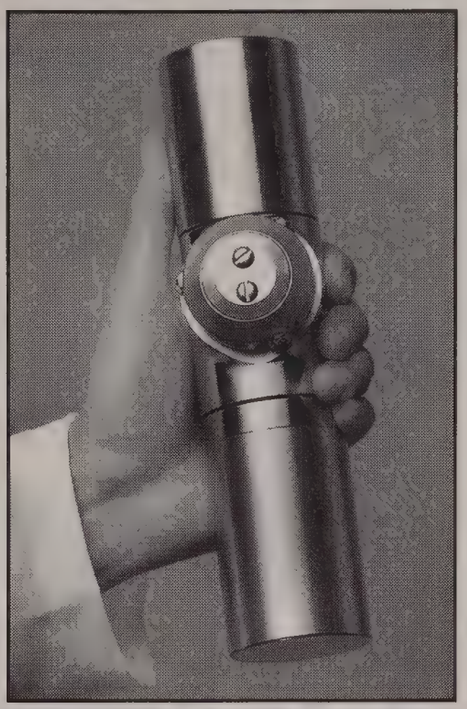

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The Cork Quality Council (CQC) sent a questionnaire to over 400 winery hospitality directors to help them assess what their staff members know about cork stoppers.

The questionnaire challenged the hospitality staffs with a series of true/false statements, one of which was: "The skyrocketing demand for corks has led to a shortage of raw material, increasing prices, and reducing quality."*

In addition to the questionnaire, the CQC offered to conduct a 45-minute seminar explaining all about natural corks from the forest to the bottle for wineries who believe such information could be useful.

"We recognize the critical role the hospitality staff plays in educating the American public about wine," says Paul Wagner, executive director of the CQC. "And we wanted to offer them an opportunity to get the whole story on natural corks."

The seminar was presented at The Sonoma County Wine & Visitors Center, Charles Krug Winery, Louis Martini Winery, Sebastiani Winery, and Markham Vineyards, and more presentations are scheduled in the near future.

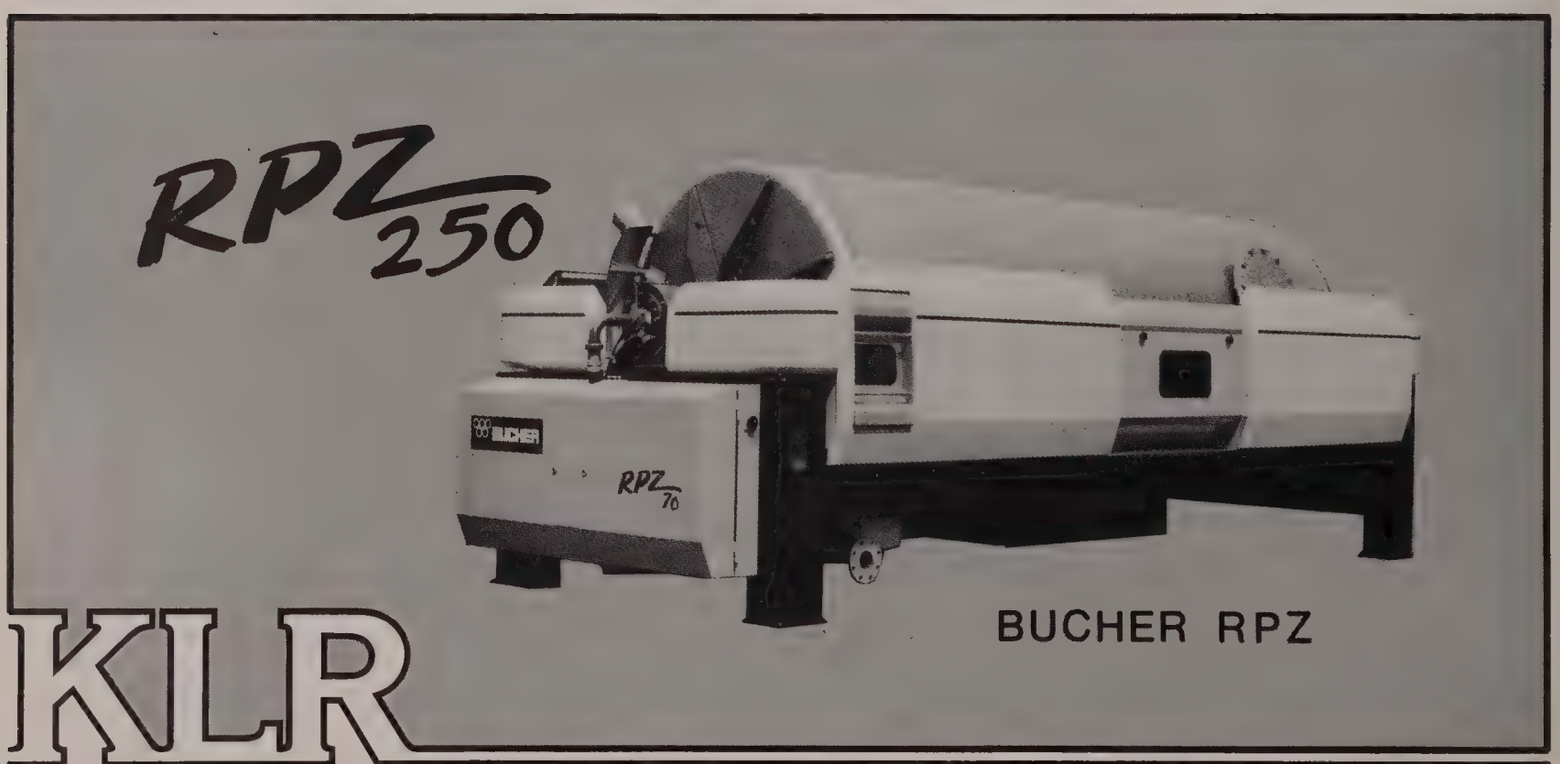
"This was a very interesting, informational, and fun presentation," says Margaret Rowell, tasting room manager at Sebastiani Vineyards. "We really appreciated the council's time and interest."

"We never realized that so much of what we thought we knew about cork stoppers was erroneous," said Lorna Ippel, hospitality director at Louis Martini Winery. "Our staff learned a lot, had all our questions answered, and had a lot of fun too."

Clinton Hulse, Markham Vineyards hospitality director, had a unique request in response to the CQC offer. He asked that the CQC not only inform his staff, but that a CQC-staffer spend one day at Markham, set up a display, and inform the public as well. After CQC completed these tasks, Hulse said, "I want to thank CQC for presenting the mystery and intrigue of the cork industry. You educated our staff and the public with wit and charm as well as informing them with the facts."

If you would like to arrange a similar presentation for your hospitality staff, contact Joe Lewis of the CQC at 707/255-7667.

**Answer:* *False. There has been a worldwide decline in the consumption of wine (and other alcoholic beverages) and a corresponding decline in the demand for cork stoppers.* ■



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A SAMPLING GUIDE:

Assuring cork quality

by K.C. Fugelsang,
Winemaster/Professor of Enology,
CSU Fresno
D.J. Callaway,
Quality Assurance Manager,
fp Portocork
M.M. Osborn,
Research Associate, CSU Fresno
C.J. Muller,
Professor/Director, Enology Program,
CSU Fresno

Establishing a quality assurance program is an important way to reduce the risk of a variety of problems in any processing application. The risk may be a supplier's risk of a good lot being rejected by the winery or the winery's risk of accepting a bad lot from a supplier.

Traditionally, to reduce this risk, suppliers and wineries establish a quality assurance (QA) program. The QA program has several facets which include a quality control (QC) function to implement inspection to identify nonconforming product; a nonconformance control system to prevent discrepant product from being used; a training and certification program so QC and production personnel are capable of performing their duties correctly; a field feedback plan to document customer complaints and problems so all key personnel in an organization are aware of previous occurrences; a system to control equipment maintenance and calibration so all test equipment is functioning properly; a document and/or specification control system so everybody understands customer requirements.

Quality Control

Many manufacturers have inspection plans which utilize a sampling system called MIL-STD-105 (sometimes called "mil-spec"). It was the culmination of several procedures developed for use by the U.S. military services. The final product, MIL-STD-105D was published by the Department of Defense in 1963. Recently, MIL-STD-105D has undergone minor revision. The current document referred to in this report is MIL-STD 105E. Complete MIL-STD 105E tables are available free of cost from:

Naval Publications and Forms Center,
5801 Tabor Ave.
Philadelphia, PA. 19120
Telephone: 215/679-2000,
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The MIL-STD system utilizes various sampling plans, inspection levels, inspection severity and accept/reject criteria. It provides predictable levels of assurance and consistent sampling techniques.

Not all wineries will be able to devote enough resources to implement a comprehensive MIL-STD based quality control program. If that is the case, some degree of risk reduction can be achieved by having good communication with suppliers and/or performing an informal audit rather than a formal inspection.

Before choosing a sample plan, it is necessary to determine which characteristics should be evaluated and what the parameters of those properties shall be. When establishing those parameters, it is important that tolerances and specifications be equal to, (but no tighter than) your processing and design requirements because tighter control limits will cost your supplier (and you) more money. Also, tolerances and specifications should not be tighter than an industry's ability to meet those standards.

This report relates mainly to cork, however, this program can be used with any purchased product — glass, capsules, cardboard boxes, etc.

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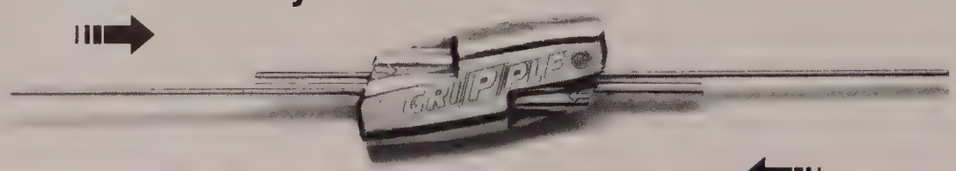

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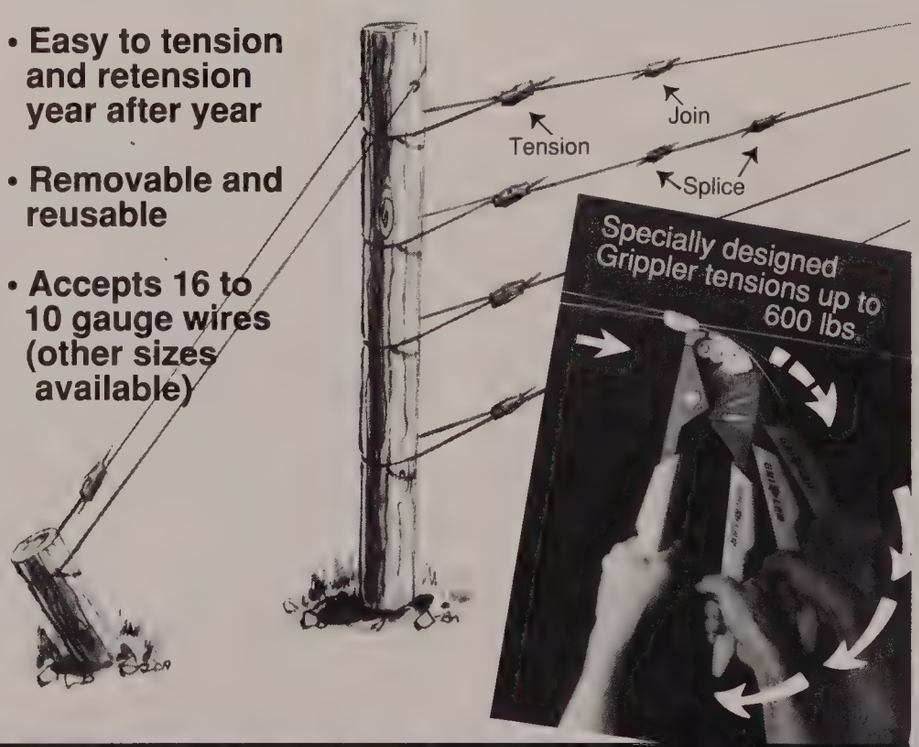

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Some characteristics, such as how well the corks will run, can only be evaluated at the winery and might apply when the order is very large. In this case, the sample size would have to be large enough to simulate an actual run. The next report will consist of a more detailed discussion of the characteristics mentioned above.

The most basic quality control program should include evaluations for visual, moisture, dimensions, coating, and sensory properties. Testing of physical properties frequently requires specialized, and often costly equipment. As many wineries lack the resources for this type of scrutiny, it may be necessary for the winery's cork supplier to perform evaluations of this nature. You may want to discuss with your supplier, the protocol and documentation for any specialized testing you require.

Issues to consider in choosing a sample plan include cost of inspection, lot or batch (shipment) size, the level of confidence required, and whether testing is destructive or nondestructive. If results for a specific evaluation and/or supplier are reliable and consistent, you can consider whether a reduced level of inspection is appropriate.

It is critical that when samples are pulled, regardless of sampling plan or inspection level, that the sample be random. The goal is to make the sample as representative of the entire lot as possible. All corks in the lot should have an equal chance of being included in the sample without bias.

Acceptable Quality Level (AQL)

The acceptable quality level (AQL) represents the maximum percentage defects allowable. For example, an AQL of 1.5% represents 150 defectives per 10,000 corks. AQL's are used in conjunction with a specific sample size to determine the level of risk of accepting a "bad" lot. This risk can be calculated and expressed by what is known as an operating characteristic curve (OC curve). OC curves will be discussed in greater detail later.

To determine acceptability of a lot after inspection for a specific sample and set AQL, refer to Table II. Find the

sample size on the table and go across the table to the column which represents the chosen AQL. The accept number on the left identifies the maximum allowable defects in that sample size and the reject number on the right identifies the number of defects which would dictate rejection.

With a sample size of 200 corks and a AQL of 1.5, seven or fewer defects would result in acceptance while eight or more would be cause for rejection. If one chose instead an AQL of 2.5, acceptance would be based on finding 10 or fewer defects with rejection occurring at 11 defects.

If you calculate the maximum allowable percent defectives acceptable at an AQL of 1.5, you will find that it is equal to 3.5% (7/200). This is obviously higher than 1.5%. The reason this defect level is acceptable is that it is based on probability and takes sample risk into consideration.

For example, a larger sample has a greater probability of representing the lot more closely than a smaller sample. Therefore, sample size is taken into consideration when determining the probability of acceptance. The operating characteristic curves (discussed in the next section) indicate these odds at specific sample sizes.

It should be noted that a high AQL such as 0.010 (1/10,000) will require a much larger sample (1,250 corks) than a lower AQL such as 1.0 (100/10,000) which can utilize a much smaller sample (13 corks). The cost to implement a high AQL with it's larger sample size is higher.

Typically, only one defect or compliance failure would be scored at one time. That is, dimensional compliance may be a separate issue (with its own AQL) from moisture or sensory or other evaluations which are performed. A class of defects such as worm holes, cracks, channels, etc., may also have its own AQL.

Operating Characteristic Curves (OC Curves)

Operating characteristics can be calculated using the lot size, sample size, and acceptance number (from Table II). The resulting graph is called an operating characteristic curve (OC curve). The MIL-STD tables include OC curves for each sample size in the single sampling plan. They are graphs which show the percentage of lots expected to be accepted along the y-axis with the percent defective level increasing from low to high across the x-axis.

Figure 1 shows an OC curve for a sample size of 80 corks and an AQL of 1.5 where only 40% of shipments with 5% defects would be accepted. Or, 90% of shipments with 2% defects would be accepted. The curves are set up in terms of likelihood of acceptance because the MIL-STD program was designed to help suppliers meet government purchasing requirements. So, if you look at the above

Figure I
Operating Characteristic Curve for a typical sampling plan

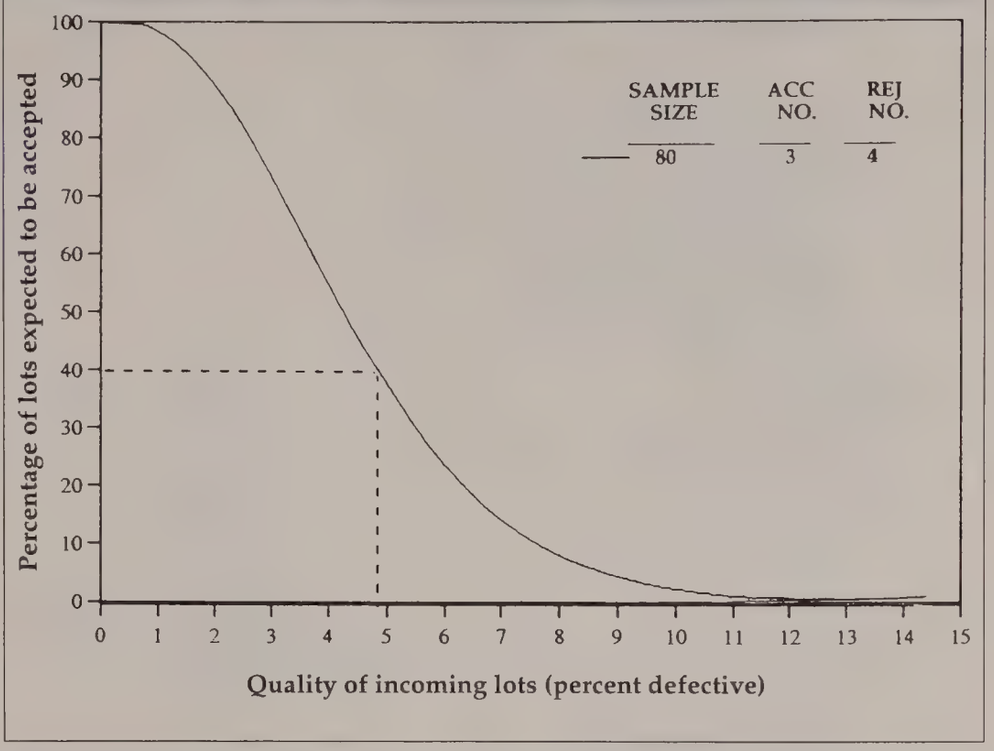

Figure II
Effect of changing sample on Operating Characteristic Curve

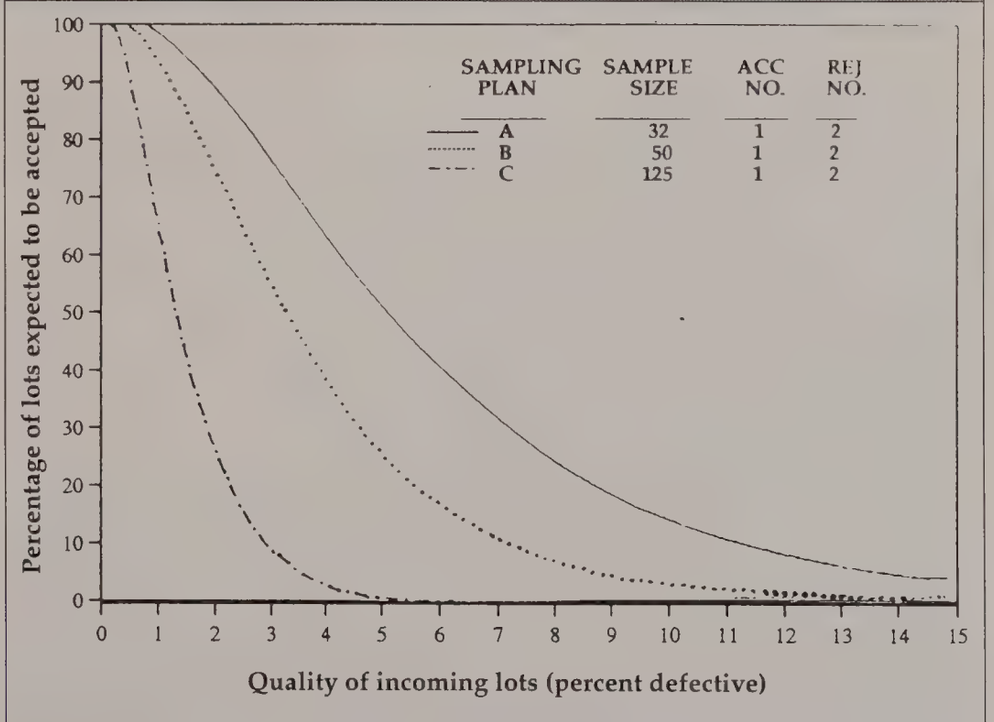

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Figure III
Effect of changing acceptance number on Operating Characteristic Curve

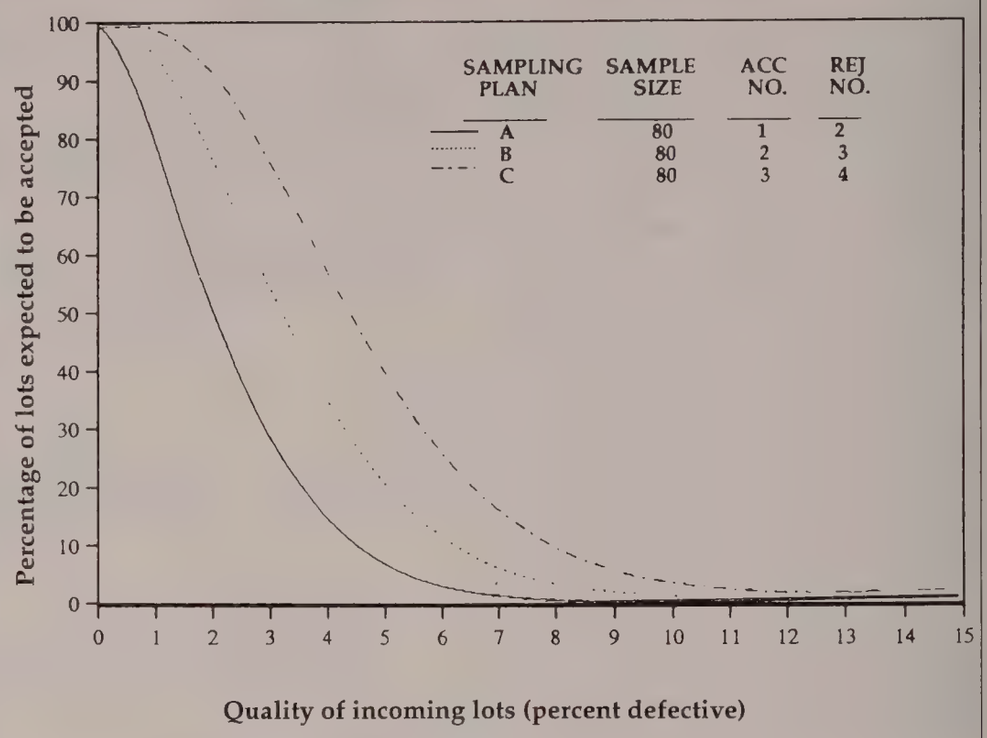

Table I
Sample size code letters

Lot or batch size			Special inspection levels				General inspection levels		
			S-1	S-2	S-3	S-4	I	II	III
2	to	8	A	A	A	A	A	A	B
9	to	15	A	A	A	A	A	B	C
16	to	25	A	A	B	B	B	C	D
26	to	50	A	B	B	C	C	D	E
51	to	90	B	B	C	C	C	E	F
91	to	150	B	B	C	D	D	F	G
151	to	280	B	C	D	E	E	G	H
281	to	500	B	C	D	E	F	H	J
501	to	1200	C	C	E	F	G	J	K
1201	to	3200	C	D	E	G	H	K	L
3201	to	10000	C	D	F	G	J	L	M
10001	to	35000	C	D	F	H	K	M	N
35001	to	150000	D	E	G	J	L	N	P
150001	to	500000	D	E	G	J	M	P	Q
500001	and	over	D	E	H	K	N	Q	R

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example from a winery's viewpoint, a lot which is 2% defective for a 1.5 AQL would be rejected 10% of the time.

Figure 2 shows the impact on the OC curve if you change the sample size. Sampling Plan A has a sample size of 32 corks, Sampling Plan B has a sample size of 50 corks, and Sampling Plan C has a sample size of 125 corks. The accept/reject numbers remain the same as the sample size increases, so where Sampling Plan A has an AQL of 1.5,

Sampling Plans B and C utilize AQL's of 1.0 and 0.40 respectively. Naturally, when the AQL is higher as in the case of Sampling Plan C, fewer lots would be accepted at the same level of defects.

Figure 3 shows how the OC curve changes when sample size remains the same and accept/reject numbers are changed. Sampling Plan A utilizes an AQL of 0.65. Sampling Plans B and C are at an AQL of 1.0 and 1.5 respectively. As you can see, fewer lots at the same defect level will be accepted for Sampling Plan A which has the highest AQL.

Sample plans

A sample plan defines how samples shall be pulled and how the accept/reject decision is made. The following sampling plans are offered by the MIL-STD system: single, double, multiple, and item-by-item sequential.

Single sampling — one sample is pulled per shipment based on the MIL-STD tables (see Table II). It is then inspected and the accept/reject decision is made based on the results of the inspection of that sample.

Double sampling — after inspection of the first sample pulled, the decision is made, based on MIL-STD tables to accept, reject or pull a second sample.

Multiple sampling — is similar to double sampling, except the number of samples required to make the decision to accept or reject may be more than two.

Item-by-item sequential sampling — also known as sequential sampling is performed by selecting sample units one at a time. This type of sampling plan may be utilized for complex assembled items.

The single sampling plan is the most popular since all accept/reject decisions are made after only one sample is pulled and inspected. For consumers of cork, all evaluations are considered destructive testing because cork sterility is compromised. Therefore, a single sampling plan would entail reduced costs when compared to other sampling plans.

The MIL-STD tables include charts for double and multiple sampling plans as well as the single sampling plan.

Inspection levels (Table I)

Inspection I levels establish the relationship between quantity of product received and the sample size to evaluate. As seen in Table I (from MIL-STD 105E) there are three categories (I, II, III)

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of general inspection levels and four categories (S-1, S-2, S-3, S-4) of special inspection levels available. Based on the lot size received, letter codes are given for each inspection level and they represent specific sample sizes as seen in Table II. Generally, the larger the sample, the lower the risk and the greater the confidence in the outcome.

Example

If a winery received an order of 50,000 corks packaged 1,000/bag with five bags/box; total of 10 boxes, a general inspection level-I sample for that 50,000 corks would, per Table I, be represented by code letter "L". Referring to Table II, code letter "L" is equal to 200 corks.

It is also possible to use the MIL-STD tables to determine the number of containers to open when sampling. For example, with 50 bags of cork and inspection level-I, the code letter is C which indicates five bags should be sampled.

Characteristic	Inspection Level	Code Letter	Sample Size
Visual	Level II	L	200
Moisture	S-3	G	32
Dimensions	S-3	G	32
Treatment	S-2	E	13
Sensory	S-2	E	13
Chemical Neutrality	S-2	E	13
Physical Properties	S-3	G	32

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It is advisable, in situations where testing is destructive, as is the case for cork in wineries, to pull a sample for the characteristic with the largest sample size and perform all subsequent evaluations utilizing the corks which remain.

In the example above, a winery would pull 200 corks (total) and perform all the evaluations on that 200-cork sample. Note that the inspection levels for the treatment, sensory, and chemical evaluations are lower than those for moisture and dimensions. This is due to the destructive nature of the tests or, in the case of the chemical evaluation, the test is involved and time-consuming.

Severity of inspection

The MIL-STD has provisions for increased or relaxed surveillance depending upon the recent history of incoming lots. Tightened inspection is triggered when two of the last five lots inspected have been rejected. In this case, sample size remains the same, but the minimal number of defective samples required for acceptance and rejection decreases. MIL-STD also provides rules for a return to normal inspection protocol. In this case, five consecutive lots examined under the tightened inspection must pass.

In some instances, reduced inspection may be justified under MIL-STD guidelines. Reduced inspection is warranted if there were no rejections in the last ten lots examined on normal inspection or if reduced inspection is considered acceptable by the responsible authority.

Rejection of only a single lot under reduced inspection requires return to the normal inspection mode. Another reason for return to normal inspection would be interrupted shipment of materials.

Table II
Single sampling plans for normal inspection (Master table)

Sample size code letter	Sample size	Acceptable Quality Levels (normal inspection)																																					
		0.010		0.015		0.025		0.040		0.065		0.10		0.15		0.25		0.40		0.65		1.0		1.5		2.5		4.0		6.5		10		15		25		40		65		100	
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re
A	2	⇩		⇩		⇩		⇩		⇩		⇩		⇩		⇩		⇩		⇩		⇩		⇩		⇩		⇩		0	1	⇩		1	2	2	3	3	4	5	6
B	3																																								
C	5																																							
D	8																							0	1	⇩		⇩		1	2	2	3	3	4	5	6	7	8	10	11
E	13																																								
F	20																																							
G	32																																							
H	50																																							
J	80																																							
K	125																																							
L	200																																							
M	315																																							
N	500																																							
P	800																																							
Q	1250																																							
R	2000																																							

Sample size code letter	Sample size	Acceptable Quality Levels (normal inspection)																																					
		100		150		250		400		650		1000																													
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re																												
A	2	5	6	7	8	10	11	14	15	21	22	30	31																												
B	3	7	8	10	11	14	15	21	22	30	31	44	45																												
C	5	10	11	14	15	21	22	30	31	44	45	⇧																												
D	8	14	15	21	22	30	31	44	45	⇧																															
E	13	21	22	30	31	44	45	⇧																																	
F	20	⇧		⇧		⇧		⇧		⇧																															
G	32																																							
H	50																																							
J	80																																							
K	125																																							
L	200																																							
M	315																																							
N	500																																							
P	800																																							
Q	1250																																							
R	2000																																							

⇩ = Use first sampling plan below arrow.
If sample size equals or exceeds lot or batch size, do 100 percent inspection.

⇧ = Use first sampling plan above arrow.

Ac = Acceptance number

Re = Rejection number

Nonconformance control

Another aspect of quality assurance programs involves establishing systems to segregate and dispose of nonconforming product. The disposition process is performed by a predetermined group of people who evaluate discrepant product and decide to accept, reject, rework or scrap.

The sequence of events is as follows:

1) Once a lot or batch is found to be nonconforming during the inspection process, a nonconformance control report (NCR) should be generated by the inspector.

2) A reference number for the report is issued. That reference number is documented on the report and on a reject tag which identifies the product and the discrepancy.

3) The product is then physically segregated from other product in the facility.

4) The report is issued which includes all of the product and lot identification information, the specification failed, and the failing inspection results.

5) A section at the bottom of the report is utilized to document the disposition and the authorizing parties.

In a winery, cork would be evaluated as a processed incoming, "raw" material and the disposition would be either to accept, reject, or return for rework. The NCR report remains open until the disposition is carried out. If the disposition is to rework, product must be reinspected before use to verify conformity; it must be conforming before it is released and the report is closed.

A formal nonconformance control system might be unnecessary for smaller organizations. However, the concept of nonconformance control is an important one.

Training and certification program

In order to assure that personnel conducting evaluations have the required technical skills, basic proficiency and/or educational requirements are determined and documented. A portfolio is established for each inspector which documents the individual's compliance with specifications. Any additional training may be documented as well.

Field feedback system

Quality assurance programs often utilize a system to document problems and/or complaints generated by customers. This field feedback system provides visibility of the types of problems occurring and assists in eliminating them.

When a complaint is received, a field feedback report is generated which identifies the product responsible, the components or lots involved and the nature of the problem. Once the issue has been researched, the cause may be determined and a corrective action can be established to prevent similar occurrences in the future. Often, sophisticated quality assurance programs include a formal corrective action system.

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Equipment calibration and maintenance

In large manufacturing facilities where inspection requires numerous and varied test equipment, good lab practices require establishment of a regular calibration and maintenance schedule for each piece of equipment.

Specification documentation

When specifications are precise and rigid or revisions require review and authorization, a formal document control system is strongly recommended. This would eliminate costly purchasing errors which occur when obsolete revisions are used to order materials.

Conclusions

As suggested in the introductory remarks, the first step in reducing the risk of purchasing (and worse, using) nonconforming supplies is to establish a quality assurance program.

Sole responsibility for quality compliance lies exclusively with the supplier. However, a winery which does not perform an inspection or audit of purchased products greatly increases the odds of using "bad" product. Getting the best possible wine to market must, rationally, be viewed as a team effort. And, as with any team effort, players must necessarily be supportive of others.

The wine consumer expects perfection. If consumers open a disappointing bottle of wine, few will attempt to determine if any fault lies with the cork supplier, the glass supplier, or the bottling line supervisor. Instead, the winery whose name is prominently displayed on the label will be perceived as the culprit.

In the final analysis, selection of a sampling plan to insure quality control and execution of that program are decisions made based on the potential costs (risks) of insufficient inspection versus the costs of implementation. One can calculate the costs involved with returns (rebottling). Yet, one must not forget the intrinsic value of a good company image. ■

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A TASTE OF THE FUTURE

Viognier

by Alan LeBlanc-Kinne

Viognier is a rare and unique wine with one of the most opulent fragrances of any wine. There is a notion that the vine is hard to grow with extremely low yields; however, many growers have found the vine vigorous and fruitful.

There are many stories of Viognier's origins. The most likely has the vine being brought to the Rhone around AD 281 from an area that is now Bosnia.

Recently, Viognier has received attention far beyond the small amount of vines planted around the world. There was less than 40 acres in Condrieu and Chateau Grillet in France when vineyard expansion began in France and the U.S. about ten years ago. The world total for the vine is now about 1,200 acres. The U.S. accounted for just six acres ten years ago, today there are about 250 acres planted.

The growth in planting of Viognier has occurred because of the development of disease-resistant clones in the 1970s and 1980s. These clones have changed the vine from a capriciously low producer into a vine that must have careful canopy management in order to balance a large crop load. The era of considering Viognier a degenerate, poor producing vine is over.

Viognier was the second most grafted white wine grape by Sonoma Grapevines in 1993. The total of 172,000 vines was small in comparison to 2.5 million Chardonnay vines, but much greater than Riesling, Semillon, Pinot Blanc, Pinot Gris, or Sauvignon Blanc.

The growth in Viognier also coincides with a search for a white wine alternative to Chardonnay. Producers are looking for a wine not to just compete for the same consumers, but rather to expand the actual number of premium wine drinkers.

This search has led to several other varieties being touted as the next best wine compared to Chardonnay. The most recent has been the championing of Sauvignon Blanc as a food companion. Viognier producers believe its overall quality is not just equal to Chardonnay, but greater.

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Wine production

PWV attended the Viognier Guild's second annual meeting in 1994. The Guild is an organization of winery members, growers, and consumers devoted to the variety. The meeting, held at Alban Vineyards (San Luis Obispo, CA), was attended by most of the U.S. Viognier producers and several French producers.

The key harvesting parameter for all Viognier producers is ripeness. The grape has a very neutral aromatic profile until it becomes ripe. Several producers likened the aroma of unripe Viognier to unripe Sauvignon Blanc. This grassy, herbal characteristic is not a desired component.

Descriptors most often used for ripe Viognier are peach, apricot, spice, and melon. A survey of producers showed that the average Brix level of 23° to 24° is most desirable.

Managing the phenolics of Viognier is another critical aspect. The grape is hand-harvested in over 90% of the vineyards. About half of the Viognier producers whole-cluster press the grapes to minimize the extraction of unwanted phenolics.

Over 90% of Viognier is either fully or partially fermented in oak cooperage. The majority of producers (nearly 70%) use neutral oak, while less than 30% use new oak. There has been criticism of Viognier produced in the U.S. as being too oaky. Even wines fermented and stored in stainless steel have been cited as having too much oak flavor.

There is no consensus in the yeast used. The most popular strain is Prise de Mousse, EC-1118. Other strains include: Epernay II, D47, L2056, and Montrachet. There is also experimentation being done with no inoculation, using native yeast.

Malolactic fermentation is used to some extent by many of the producers. Most do not bottle a 100% malolactic Viognier wine. As the aromatic component of the wine is the most critical consideration, many believe 100% malolactic would jeopardize it.

The wines are kept on the lees while in barrel with the division between heavy and light about 50/50. There is also an even division about stirring the lees. Stirring is normally carried out on wine on heavy lees approximately once per week. Most wines on light lees are not stirred or only stirred monthly.

Spring following harvest is the most common bottling time for Viognier. The producers do not want the wine to lose its fresh, aromatic appeal. The wines are released earlier than most other barrel-fermented white wines.

Conclusions

Recently, there has been criticism of wine producers for homogenization of wines and wine styles. The theory is that wines are generally becoming better, but they are also becoming more similar.

Wine producers are looking for another white variety that can compete with Chardonnay's appeal, while offering different and intriguing tastes to the palate.

Viognier may be the grape to carry the mantle as the other premium white varietal. Previous problems the variety had in the vineyard limited its appeal to merely a cult wine. Resolution of these problems has led to impressive worldwide growth. In absolute numbers, the acreage of Viognier is tiny, but the interest is not.

Viognier is an excellent winemaking partner in wineries that already produce premium Chardonnay. New oak barrels can be utilized with Chardonnay, while older barrels are used in Viognier production. Viognier is normally bottled and put on the market several months earlier than Chardonnay, thereby producing faster cash flow.

There are some negatives associated with Viognier. Currently, the price of the wines reflects the scarcity of the product. Because of the relative newness of the variety and its production, there is no benchmark on production techniques. Many of the current methods used are because of limited production.

Because the grape needs a high degree of ripeness to fully develop its aromatic component, the wines are generally high in alcohol. The wine is also not felt to age well for a long time. Older Viogniers often lose the intense floral/fruit component and seem to fade. These problems may be alleviated as the vineyards become older and the winemaking more fully understood.

However, Viognier growers and winemakers believe they have found the next classic variety. They believe this opulently intense wine will become as popular and easily found on market shelves as a well-made Chardonnay. ■

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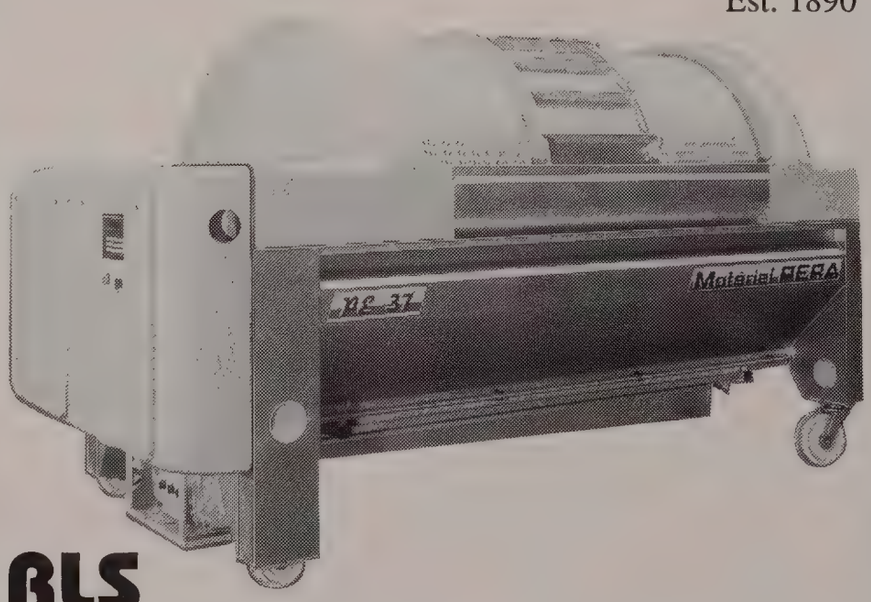

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By Dr. Richard Carey

DriWater and Garlic for grapes

I am pleased to begin a new writing assignment for ***PWV***, and will report about new technology available for grape and wine production. The column will focus on innovations in the industry that have practical import for either grapes or wine. If you have any suggestions or comments regarding content or new things to investigate, please contact me at ***PWV***!

Two recent articles (published elsewhere) demonstrate the direction this column will take. The first examined an amazing leaf remover, L'effeuilleuse Automatic by Caudray of Lonay, Switzerland. This device vacuums the leaves off the vines right in the fruit zone with minimal damage to the fruit. The leaf remover was on display at the SITEVI trade show in France in 1993. I visited the 1994 Sitevinitech show in Bordeaux and will report on items there of interest to you in future columns.

The second article concerned a laminated stave barrel produced by a French company, Compangnie Royale de Tonnellerie, that is considerably less expensive than conventional barrels. The French manufacturer has conducted a lot of research to be sure that air transport into the barrel is not affected by the lamination process and that any materials used in lamination will not carry into the wine. They use very high quality wood for the interior, wine-contact side of the stave. Even though the exterior wood is of a lower quality for winemaking, the cosmetic appearance was beautiful.

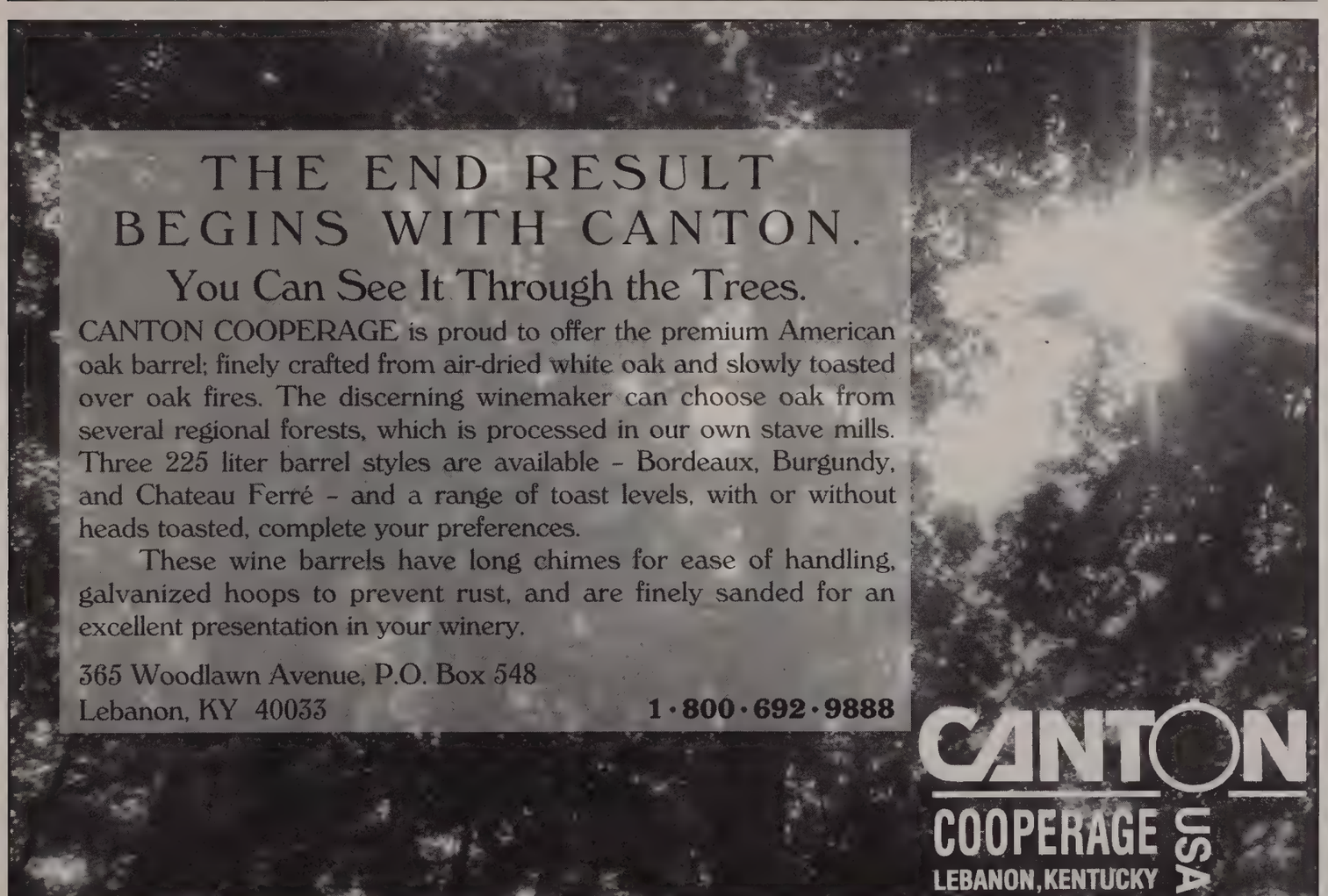
The innovations below concern vineyards. Both items can help growers get more and better fruit to the winery sooner.

DriWater

One problem facing all grape growers is the replacement of vines lost in a block. Whatever the percentage of vines lost is the percentage revenue lost for that block, so establishing a producing vine as fast as possible should be every viticulturist's goal.

A new product called DriWater could help to re-establish a vine quickly. While most of the literature on this product to date is from planting trees, the usage in a vineyard should be directly related.

Chemically, DriWater is a gel formed with food grade gum and alum, that makes a gelatinous mixture which is 98% wa-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ter. This mixture is supplied in quart containers. By strategically placing two quarts at the root ball just prior to the dry season, vines should receive the appropriate moisture to make it through the summer without disrupting the normal watering cycle in the rest of the vineyard.

The primary key to using this product successfully will be to determine the amount of nitrogen in the soil, and the amount of nitrogen to add to the DriWater container. The gel releases its water by reacting with the microorganisms in the soil (specifically the enzyme cellulase). A ⅛-teaspoon of nitrogen fertilizer is recommended to be applied directly to the DriWater at installation to insure that liquefaction begins immediately. If there are no microorganisms and/or there is no nitrogen, then the product does not release its water predictably. In typical soils containing low levels of nitrogen, the liquefaction time is 120 days; soils with high nitrogen content require about 90 days to liquefy the DriWater.

The good news is DriWater is not toxic. Some polyacrylamide gels (the other type of moisture regulation material available for use in vineyards) can be toxic to a certain extent. More importantly, acrylamide gels are very unpredictable under heat stress and the product may release its water much too quickly when it gets hot.

On a tree plot (the only study for which I have data), DriWater showed measurable growth in 65% of the trees planted, and from a general plant condition viewpoint, 80% were in fair/average to good condition, 12% were in poor condition, and 7% died.

DriWater costs just over $1 per quart, with a quantity-dependent pricing structure. At a cost of $2 or more per vine, it will have to be used in situations where there are only isolated vines being replaced and where it would be a significant burden on the vineyard crew to change the watering schedule for just a few vines per block. Individual farming practices will dictate where the cost/benefit ratio favors the use of DriWater or where the vineyard owner can tolerate the expense and hassle of altering watering schedules. Several vineyards are reportedly trying DriWater and I will report any results I receive on this product.

Plant Pro-Tec

I can guarantee you will not be able to use the next item if you are a vampire or are sickened by the smell of garlic. Plant Pro-Tec has developed a protection repellent using garlic oil it claims will reduce your vineyard's rabbit and deer damage to tolerable levels in the vineyard.

In the past, I reported on using cheap perfumey soaps hung in mesh on end posts of a block as an inexpensive method to repel deer and other animals. Because of wash down from irrigation or rain and oxidation of the product, this method worked for a short while but not well enough to warrant replacing the soap every time it lost effectiveness.

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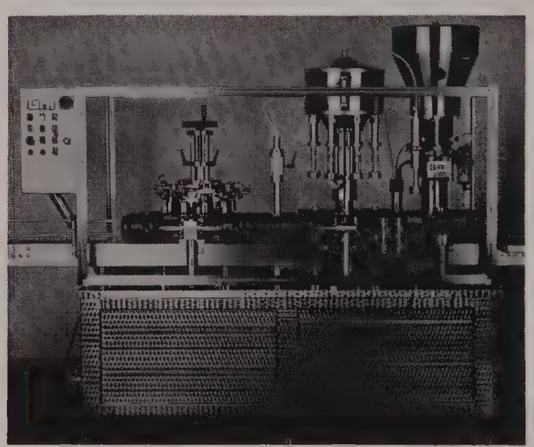

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your vineyard perimeter with these little dynamos of odor, and since the browsing beasts don't want to ruin their dates for the evening meal, they dine in other less aromatic areas.

The device has been revised since 1992 when first introduced. According to Jerry Walters PhD, of Plant Pro-Tec, the vineyard crew at a Gallo property investigating the efficacy of the device attached the garlic repellents vertically on the vine. When Walters checked with them later to see how well the garlic performed, they reported that the device appeared to work very well for the first week or two. Progressively after that, it appeared to become less effective. It was learned that rain or overhead irrigation would enter the device and prevent the repellent from emitting its strong, long-lasting garlic odor. By attaching the improved model horizontally, no water can get in. A new model, available in 1995, will have a rain cover.

The garlic units have an effective radius of 24 inches and appear to work against deer, rabbits, elk, and other browsing animals. The cost is about $220/thousand with quantity discounts. The minimum order is 250 devices for first-time users. Research articles claim a cost-effective reduction in browsing, if the garlic repellents are used at the proper density. The garlic odor is released over time; it should last more than one growing season. It may repel until the device photodegrades in about 24 months (under Redding, CA conditions of long, hot summers).

The garlic odor lasts a long time because of a cone inside the device which allows the garlic odor out, but prevents oxidation of the sulfur compounds which give garlic its repelling odor. A deer's nose is from 100 to 1,000 times more sensitive than a human being. If a person can smell it from an inch away, a deer should smell it from 100 to 1,000 inches away.

If you do use these devices, you'll know a safe place to be on the night of the full moon! ■

For more information about these products, contact:

Dri-Water, Inc., 715 S.Point Blvd. Suite P, Petaluma, CA 94954, tel: 707/769-5343, fax: 707/769-0335.

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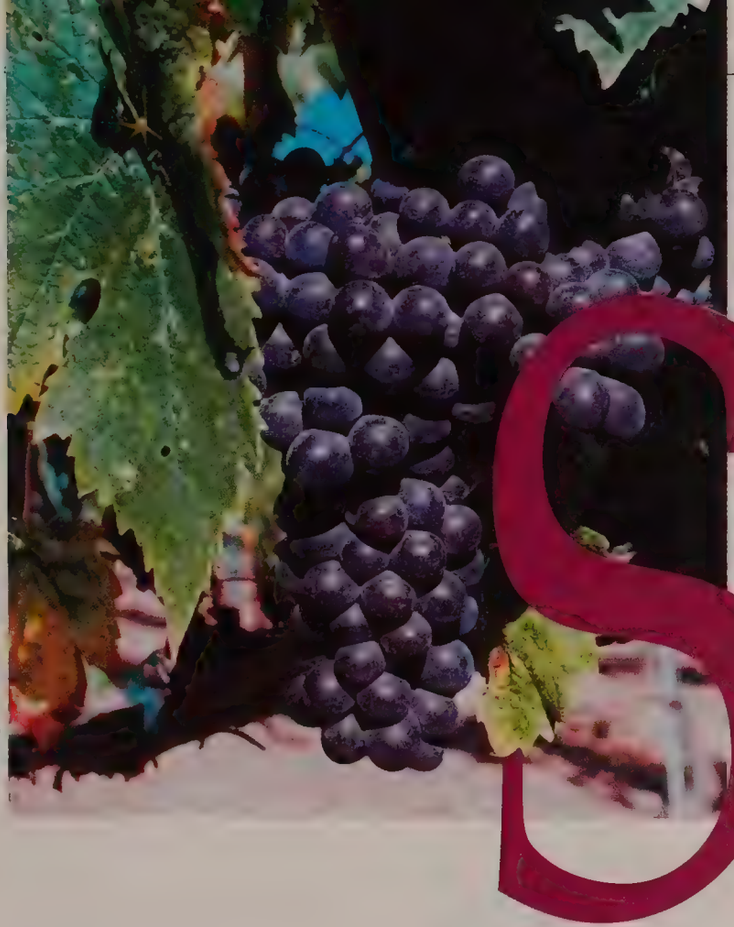

Photo by: Steve Hosmer

No limit to variations Sangiovese —

by Eleanor & Ray Heald

From Italy's Tuscany region, Chianti is the best-known red wine. It draws its charm primarily from the Sangiovese grape, but there seems to be no limit to variations Tuscan producers have created when working with this varietal. Grown in California, Sangiovese is beginning to show a similar potential.

Under "traditional" Chianti production, the law required a blend of 20% Canaiolo, Colorino (red grapes), Trebbiano, and Malvasia (white grapes). This law stifled creative potential of both producer and grapegrower. A new law effected for the 1984 harvest, allows up to 10% of non-traditional varieties such as Cabernet Sauvignon to be blended with a maximum of 90% Sangiovese. Variations appear to be limitless and when Chianti producers feel choked by the law, they blend Sangiovese outside the limits of the law and create proprietary blends.

Consumers make the easiest association of Sangiovese grown in California with their favorite Chianti, but this is not where the Tuscans stop. There's Brunello di Montalcino (where Sangiovese Grosso is the clonal selection), Carmignano (that, since the 18th century, has up to 10% Cabernet Sauvignon in the blend), and Vino Nobile di Montepulciano (made from Prugnolo Gentile, a clonal selection of Sangiovese Grosso). These wines also receive longer wood ageing.

To offer readers greater insights into Sangiovese production, ***PWV*** invited several producers from both Italy and California to participate in this exclusive varietal review.

PWV conducted a round table discussion/tasting with the following winery representatives who produce Sangiovese: Glenn Salva, Atlas Peak Vineyards, Napa, CA; Patrick Pickett, Estancia Estates, Rutherford, CA; Ken Deis, Flora Springs Wine Co., St. Helena, CA; John Sims, Seghesio Winery, Healdsburg, CA; Elias Fernandez and Doug Shafer, Shafer Vineyards, Napa, CA; Jon Emmerich, Silverado Vineyards, Napa, CA; and Marco Cappelli, Swanson Vineyards, Rutherford, CA.

Vines and viruses

Unirrigated hillside vineyards is the ideal Tuscan growing site for controlling vine size. "I'd like to defend the valley floor," Capelli began and explained that Swanson has a total of 10 acres on the Napa Valley floor; four acres bordering the Napa River and six acres on the west side of the valley south of Oakville. He believes that when soils are richer, Sangiovese's natural vigor must be tamed by canopy manipulation.

Swanson employs a Geneva Double Curtain (GDC) providing a split canopy. The vines set about seven to 10 tons/acre (TPA), but are thinned to six TPA. Cappelli maintains that Sangiovese is a "droopy grower" and GDC is well-suited for this growth habitat.

Salva noted that currently there is significant clonal study being done in Italy. "Research seems to indicate that there is not one clone that is best suited for all vineyard sites," he said. "The clonal selection that is prime for the northern Chianti area may not be adequate for the south or in Montalcino. Sangiovese, more so than Cabernet Sauvignon, is sensitive to site selection and we're witnessing this in California."

Many Tuscan vineyards are 40 to 50 years old, and properties are being replanted. These vineyards have significant virus infection, eutypa, and trellis systems that are not producing top fruit quality.

"With new plantings, the Italians are getting out of the promiscuous field blends and are going with what is believed to be the best clonal selection and rootstock for a given site," Salva noted. "They are practicing the same viticultural techniques we are — site selection, clonal selection, rootstock, trellising, and row direction. They are applying the most advanced technology to their vineyards just as we are in California."

But the Tuscan grapegrower has different struggles with climate during the growing season than California. In California, it's not a problem to get 23° Brix with Sangiovese while in many years, the Italians are hard-pressed to get 20° to 21° Brix because of late summer and fall rains. These climatic circumstances keep the Italian Sangiovese grapegrower from planting in heavier soils and they have literally taken to the hills for better drainage.

Swanson budded over an existing vineyard and discovered that some of

the budwood was not virus-free. These vines are being pulled as virus is found. Replanting is done with UCD2 and a Robert Pepi vineyard selection which appears to be a mix of clonal selections because there are variables in bunch shape and berry size from vine to vine.

What's the virus-free guarantee when using vineyard selection budwood? "There are no guarantees," Cappelli maintains.

Atlas Peak has the largest Sangiovese vineyard in California, with 120 acres in production. Soils are volcanic, rocky, and well-drained because of the elevation between 1,500 and 1,800 feet. They vary in depth from two feet to well beyond what can be dug with a back hoe. The nature of the land offers multiple exposures. "I can't say that one row direction is better than another," Salva maintained. "More importantly, multiple directions offer blending components with different blocks developing a range of flavors."

Pickett described the two Estancia growing sites in Alexander Valley. One is close to the Russian River on heavier loam soils and the other is hillside with some clay. "Our challenge is controlling vigor and we've adopted Scott Henry and Smart-Dyson vertical trellising. We can set 12 to 13 TPA, but through canopy management, shoot thinning, and thinning weaker clusters at veraison, we're harvesting six to seven TPA. We're definitely on a learning curve."

Sims reports that Seghesio's yields are closer to four TPA from a vineyard planted in 1986.

"We're on a terraced rock pile and yields are three to 3.5 TPA," Shafer said. "The number of clusters/vine on our clonal selection is low, but they are very heavy with big wings. We clip the wings that don't develop good color. If we didn't do this, we'd have yields at 5.5 TPA, but a weaker wine."

Deis described two four-acre sites, one on loamy/clay soil directly in front of Flora Springs Winery and the other in Pope Valley. The winery parcel develops good color and flavors, but different from the fruit character of the Pope Valley grapes, which Deis described as "pretty." Vegetative growth on 5BB rootstock is limited in Pope Valley and the wines are grown organically. The winery site is on a vertical trellis to control vine vigor. This block is managed to yields of six TPA, while the Pope Valley site doesn't yield more than six TPA.

It was generally agreed that when grown in the wrong site with poorly managed canopy, or when overcropped, Sangiovese will be light in color with simple flavors, have high acidity, and lack ageability.

An expensive grape to grow

Sangiovese is expensive to grow, probably the most expensive of any red grape. "All the thinning and canopy management required is labor- intensive," Salva noted. "We don't have to do this with Cabernet Sauvignon. When you're only harvesting three TPA and dropping ⅔ of the crop to insure ripeness and flavor development, that's expensive."

Harvest criteria

"Flavor is paramount," Shafer emphasized. "We need higher sugar levels to get into the berry, black fruit realm with some spiciness that we like. The grapes are weedy at lower sugar levels. Acids are not a problem, they stay up there quite well."

Cappelli strives to get fruit as ripe as possible, but not over-ripe and pruney. When grapes reach 23.5° to 24° Brix and they taste good, they hang four more days before picking in order to respire malic acid.

"When you refer to acid levels and Sangiovese, you're talking high sevens and eights," Fernandez maintained. "We'd like to pick when TAs are under seven, but with Sangiovese, that's not always possible because the acidity on the varietal is amazing with pH around 3.25 to 3.30."

Salva believes that acid levels are yield-dependent. "We talk about TPA, but what we should be monitoring is pounds/vine. We have vineyards that are 1,200 vines/acre, but we're only getting a few pounds/vine. Overcropping will always yield high acids. In this regard, Sangiovese is like Zinfandel."

"This is a misconception," notes Cappelli. "Overcropping occurs when the vine has more fruit than it can ripen. If, therefore, one wants to pick the fruit (from overcropped vines) before the elements (rain, frost, winter) destroy it, then the acid levels will be higher because the fruit is not *ripe*. If the fruit is *ripe* and you still have high acids, then it is not a question of 'overcropping,' but rather it is a ***high acid*** varietal."

Doug Shafer recalled that in their first year, uneven ripening within clusters was a bigger shock than high acid levels.

The initial approach at Atlas Peak was to treat Sangiovese like Cabernet Sauvignon. "Sangiovese needs to be treated with kid gloves," Salva contends. "Even though we have the Antinori connection, it took us a few vintages to fully understand the sensitivity of Sangiovese grape growing. Besides providing maximum sunlight on the fruit with a cordon system and controlling crop yields, we learned that uneven ripening occurs when clusters are nested on each other.

"If you don't monitor this, Sangiovese will do what Zinfandel does. Clusters that appear properly colored on the outside, will not be that way on the inside. We now make every attempt to spread the clusters out along the cordon. This has helped with better ripening and improved acid levels. This allows the wine to have more richness without the need to blend high percentages of other varieties into the wine."

It was mentioned that for some reason, the clusters were smaller, approximating the size of Pinot Noir in the 1994 growing season. "With only 16 inches of rain, I think we can consider 1994 a drought year," Cappelli noted.

Inoculation

Pasteur Champagne yeast was used at Silverado in the first production of 1992 and Emmerich notes that their experience is limited. Production in 1992 was two barrels and it grew to 16 barrels for the 1993 harvest.

"If 24 to 48 hours qualifies as a cold soak, then we do it," Emmerich reports. We have a Healdsburg stemmer/crusher which has been referred to as a crush-and-destroy, so the berries are fully broken."

Cappelli believes in long skin contact and therefore waits three days before inoculation with Pasteur Red, a slow fermenter. The crusher rollers are wide open to not break all the berries. But Cappelli notes that Sangiovese is thin-skinned and the berries get beat up easily.

The cold soak is done at 50°F to 55°F with 30ppm SO_2 added. "I can't say I know what's happening in the cold soak period," Cappelli admits. "But we get a lot of nice fruit development coming out."

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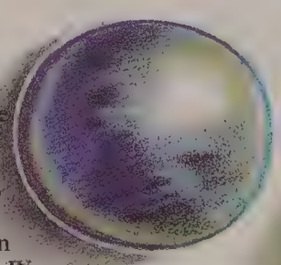

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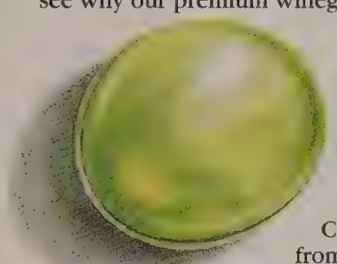

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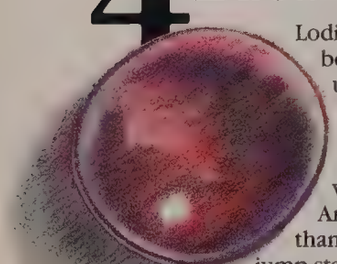

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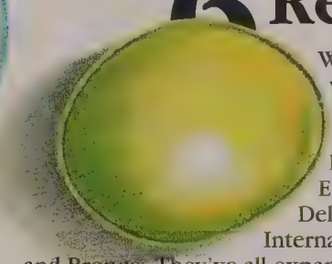

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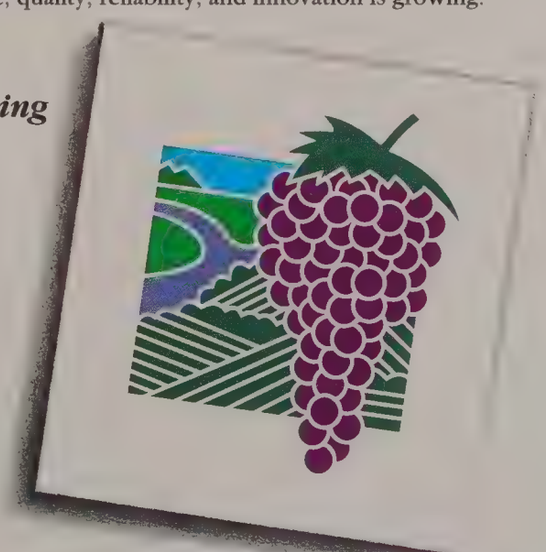

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Fermentation vessels and peak temperature

Emmerich asked whether any winemaker in the group had seriously considered fermentation vessels.

Deis said that in 1992, the Sangiovese project at Flora Springs amounted to two tons. Therefore ½-ton picking bins were used for fermentation. Now, with increased production, open-top tanks measuring four feet high and seven feet in diameter, have been purchased.

"However, I think our best Sangiovese lots are fermented in the regular Merlot and Cabernet Sauvignon tanks," he comments. "But the tanks are only half-filled and we use a gentle pumpover technique. These lots have improved color.

Fermenters at Estancia are cooled to control maximum juice temperature to 85°F. "We're trying to focus on retaining fruit character," Pickett says. There was group agreement, that peak juice temperature in the 80s was the practiced technique.

Cap management

Early in the discussion, Salva mentioned that Sangiovese needs to be treated delicately and this started a discussion of cap management.

"We all probably treat the cap differently," Salva remarks. "Originally, we did pumpovers, but now we've switched to a sprinkler device because it provides a more gentle pumpover."

Estancia is using a sprinkler now, but early on in production, the cap was punched down. "Basically, we're using the same techniques that we use for Pinot Noir to capture the fruit rather than for tannin management," says Pickett.

Managing tannins

If tannins are unmanageable in the vineyard, what is done in the cellar to manage them?

"OK, I used to look at that and say we screwed up in the vineyard," Fernandez offers. "Because we've been used to working with Merlot and Cabernet Sauvignon at Shafer, we were surprised by the unusual tannin structure of Sangiovese. It leaves a mineral-like coating in the mouth. During fermentation of destemmed fruit, we're on guard against too much tannin extraction to balance flavors. We taste the fermenting juice twice daily and have pressed at 8° Brix, then completed fermentation in tank."

Deis has tried whole clusters, but did not like the flavors. Pickett has done the same and it increased the herbaceousness. Deis adds that Sangiovese has a different type of tannin, unlike Cabernet Sauvignon.

Frequently, Italian Sangiovese is referred to as astringent. "We haven't experienced that," Salva says. "It may be due to the fact that we're able to pick the grapes riper in California. We also don't think our tannin levels are overpowering."

"Marco [Cappelli] put it well when he said that Sangiovese is a compact wine," Pickett compliments. "But to increase fullness, we add Cabernet Sauvignon. We press off at dryness and also do some extended maceration. There's no rule and the decision to press or extend

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maceration is a matter of taste."

Emmerich explained monitoring at Silverado. One lot was pressed after five days and the other after 17 days. Light color was undesirable and extended maceration was done to see if there was color enhancement. Tasting the wine after a year, there's little difference in flavor and no difference in color. The only element noticed was that the longer-macerated lot did not clear as well. Eggwhite fining was done and it did not drop the haze, but it came out with filtration. Now, there's no noticeable difference between the two lots.

"We were attempting to press at the color peak," Emmerich continued. "This occurred on day five. After that, it dropped off, but it is coming around again as the wine ages."

Shifting character

Pickett asked the group about a fruit character shift in the wine during its development. After fermentation, a bright fruit profile diminishes during winter. Cappelli reported that it happens every year and Deis agreed.

"I'm used to it now," Cappelli jokes, "I call it `winter slumber.' But kidding aside, Sangiovese is difficult to keep clean and we've had significant sulfide problems during the winter. We have another standard joke and it's if you want to get depressed in winter, go to the cellar and taste Sangiovese!"

"Even Piero Antinori says that he's learned not to taste Sangiovese until June or July following harvest," Salva contends. "Now we taste in late winter and spring to look only for developing problems, and wait until early summer to evaluate the wine's true varietal characteristics."

The group questioned the age of the cooperage and Pickett responded, "mostly older wood with a small percentage of new barrels."

Blending

Shafer studied the existing blending potential from its vineyards and that was Merlot, Cabernet Franc, and Cabernet Sauvignon. Cabernet Franc was too perfumey and hid the Sangiovese character and it didn't enhance the wine's body. Merlot made the wine too supple and out of balance. Cabernet Sauvignon's tannin profile improved mouth structure and it's about 17% of the blend. "But as our vines mature, our goal is to make a wine that's 85% to 90% Sangiovese," Fernandez maintains. "This philosophy insures that Sangiovese character will not be dominated by another varietal in the blend."

Cappelli blended 15% Cabernet Franc in the 1991 and 5% in the 1992 wines for violet aromas, color, and body. Future wines will most likely use little to no blending varietals. Merlot was completely unsatisfactory.

Early experience at Atlas Peak was that, without a blending varietal, the wine was falling short in the mid-palate, so 4% Cabernet Sauvignon was blended to improve the wine's structure. In years following, Cabernet Sauvignon and Cabernet Franc were used for the same reason. "We believe that because of what we have learned in growing Sangiovese, the mid-palate was there in the 1992 Sangiovese. We did not blend in another variety. We consider this a major achievement."

***PWV** thanks Shafer Vineyards, Napa, CA for hosting the discussion/tasting.*

ATLAS PEAK VINEYARDS®

Napa, CA

Glenn Salva, general manager

Clonal selection: Sangiovese Grosso

Budwood source: Antinori clonal selection

Style

Elegant and inviting with full raspberry flavors, firm texture, and long finish. The wine has soft tannins, but is lighter in body than Cabernet-style wines and is predicted to age from three to 10 years.

Vineyards

Vines averaging six to eight years old, on a variety of rootstocks (110R, 3309, 5BB, 5C, and AXR-1), are spaced four to six feet apart in the row, 454 to 1,200 vines/acre, depending on the parcel.

All sites are hillside and rocky with well-drained volcanic soils. Trellising is predominantly lyre with a cordon at 30 inches and vertical catch wires. At pruning, spurs are positioned one-foot apart.

Canopy management techniques include cluster and shoot thinning at berry set and thinning poorly-colored clusters post veraison. Yield averages three tons/acre.

Brix is the most important harvest parameter, averaging 23.5°. TA is about 0.75 with 3.4pH.

Winemaking

Juice and destemmed/crushed grapes are inoculated the same day harvested. Maximum fermentation temperature is 85°F during an approximate seven-day fermentation in a closed, eight-foot diameter fermentation tank. The cap is sprinkled twice daily for 30 minutes. Post-fermentation maceration can last up to 14 days.

Inoculation for MLF is done after primary fermentation. First SO_2 addition of 25ppm is made post-MLF.

When MLF is completed, the wine is racked off the lees and transferred to a mix of one to four-year-old French oak uprights (1,000 to 2,000-gal), puncheons, and barrels for 12 months. The wine is racked every four months and SO_2 levels are maintained at 25 ppm free.

The wine is DE-filtered and also 0.65μ prefiltered before going to bottle 15 months after harvest. It is bottle-aged six months before release.

Badia a Coltibuono

Chianti Classico Riserva

Gaiole in Chianti, Italy

Roberto Stucchi, winemaker

Clonal selection: mass selection Sangioveto

Blending varietal: Canniolo (10%)

Style:

A classic Chianti Riserva with raspberry and cherry flavors which begins to reach maturity for consumption at five years after harvest.

Vineyards

Vines averaging 25-45 years old are planted on 420A rootstock, spaced 10-ftx3-ft (1,200 vines/acre) on a southwest exposure. The soil is limestone-based with a fair amount of clay. Topsoil is 50-60cm deep with equal parts of clay and sand. Typical rainfall is 500-600mm/year in the vineyard between 250-300m elevation.

The trellis is a 3-wire vertical with a traditional arched-cane (the cane has 9-11 buds, depending on vigor). [See Nozzole for arch-cane details.] Green

harvesting (cluster removal) is done in July when necessary, and leaves are removed when necessary after veraison in late August. Typical yield is 42-45 hL/hectare.

Sugar is the primary parameter for harvest: a potential alcohol of 12.7 to 13.5 is desirable.

Winemaking

A light crushing of all grapes is followed by a 25 ppm SO_2 addition. Native yeast ferments the must in 300hL closed fermenters. Maximum fermentation temperature is 28-29°C during a 5-day fermentation and total skin contact is three weeks including post-dryness maceration. The cap is sprinkled twice/day with ⅓-of fermenter capacity.

Natural MLF is allowed. The first racking off gross lees occurs within one month after pressing and the wine is racked off the ML lees in February or March. Generally, no press wine is added back to the Riserva blend. The next SO_2 addition is 30 ppm at end of MLF. The wine goes to 15-30hL French oak casks for two years and SO_2 is maintained at 20-25 ppm free. During the first year, one aerative racking is done, and there is one aerative or protected racking in the second year with a mohno pump.

There is one blending before cask ageing, a second blending after one year in cask, and a final blending if necessary, after cask ageing. The wine is not fined and there is a coarse pad filter ahead of the filler. The wine is bottled 3-4 years after harvest with 30 ppm free SO_2 and 90-100 ppm total SO_2 with a typical TA of 0.50-0.55, and 3.25-3.3 pH. The wine is bottle-aged one year before release.

Ca'del Solo
Il Fiasco

Bonny Doon

Santa Cruz, CA

Randall Grahm, winemaker

Clonal selection: unknown
Budwood source: Rodeno
Blending varietals: Malvasia nera or Mataro (depending on vintage) Cannaiolo, Mammolo

Style

Rose-petal, cherry, anise aromas, and a flavor profile of red meat and cherry is the stylisitic aim. The wine is designed to be drinkable upon release and exhibit youthful pungent, floral aromas with refreshing acidity and lively palate. Ageing potential is two to five years.

Vineyards

Grapes are sourced from the San Bernabe Vineyard near King City in Monterey County. Vines average 15 years old and are on Zinfandel rootstock. They are spaced 7x11 feet, approximately 600 VPA. Soils are sandy with granitic subsoil.

A three-wire vertical trellis is used. Pruning leaves two bud spurs/cordon with approximately 16 buds. Canopy is managed by leaf pulling on the north side and shoot positioning. Crop load is kept between three to four TPA with cluster thinning at veraison.

Even ripening and flavor development are high priority picking criteria. On average, the grapes are picked at about 24.5° Brix, 0.90 TA, and 3.15pH.

Winemaking

The winery does not own a crusher, therefore about 50% whole berries are pumped to varying-size fermenters. Inoculation with Assmanshausen active-dry yeast (ADY) is done immediately. Yeast nutrient is added at 2-lb/1,000gal.

Both punch-down and pump-over (with a mohno pump) are done three to four times/day for 20 minutes. Inoculation with MCW malolactic bacteria is done at 5° Brix. Fermentation completes in 11 days with maximum juice temperature of 85°F. A three-day maceration post-fermentation is done before pressing. All press wine is added back.

First SO_2 addition of 45 ppm is made after MLF completion. Wine is transferred to four and five-year-old Allier and Nevers oak barrels for nine months. Wine is racked with aeration once or twice. Free SO_2 levels are kept at 20 ppm.

Before bottling in June following harvest, the wine is blended with 23% Malvasia (1992), and 9% Mataro (1993), to create flavor impact and complexity. Wine that is neither fined nor filtered is given three months bottle ageing before release.

Estancia
ALEXANDER VALLEY

Rutherford, CA

Patrick Pickett & Greg Upton, winemakers

Clonal selection: Sangiovese Grosso
Budwood source: Il Poggione in Brunello and Trentadue
Blending varietal: Cabernet Sauvignon

Style

The wine exhibits bright strawberry fruit, toasty oak, and vanilla. In the mouth, it showcases rich strawberry fruit, is fairly full and round with a soft, supple tannin structure.

Vineyards

Seven-year-old vines grown on 5C and 101-14 rootstock in the Alexander Valley are spaced 8x5 about 1,100 vines/acre in an east-west direction. Soils are deep loam with clay.

Trellising, manipulation, and six to seven tons/acre are discussed in the introduction.

Harvest parameters include about 23° Brix, 0.80+ TA, and 3.4 pH.

Winemaking

Juice from destemmed and crushed grapes is inoculated the day after picking with Pasteur Rouge yeast. Fermentation in both open and closed-top fermenters (seven to 15-ton capacity) completes in seven days with peak juice temperature at 85°F. The cap is punched down twice daily at one minute/ton.

A post-dryness maceration lasts seven to 14 days. The wine is pressed and immediately transferred to a combination of new to older French barrels. MLF is spontaneous. The first SO_2 addition of 40 ppm is added post MLF. Wine is racked off the ML lees in one to three months, but remains in barrels for 12 to 14 months.

Racking is done every three months with free SO_2 levels maintained at 18 to 20 ppm.

Blending with about 15% to 20% Cabernet Sauvignon is done just before bottling. The wine is aged three months before release.

Prunaio

Fattoria Viticcio s.r.l.

Greve in Chianti, Italy
Alessandro Landini, winemaker
Clonal selection: Sangiovese Grosso

Style

A tight, elegant wine with cherry, plum, and violet character with vanilla from two years ageing in small oak barrels. When aged, the wine can develop chocolate flavors.

Vineyards

There are 3.5 hectares divided into two blocks with vines averaging 16 years old on 140R rootstock. Vines are spaced 2.8mx1.2m on a south slope with vines rows running up/down the slope. Soil is marl-limestone (95% limestone and 5% clay) in one meter deep top soil.

Typical rainfall is 700mm/year and summer high temperatures are 36-38°C. Every other year, a soil amendment (4-16-24) is applied in November/December and a foliar application is done annually if needed in April/May.

Vines have two cordons pruned to three nodes/cordon. After set, green pruning is done (weak shoots are removed) to yield six tons/ha. At the end of August/early September, leaves are removed in the fruit zone at almost complete veraison.

Harvest in early October is determined by healthy vines, good color, and potential alcohol. Grapes are harvested at 21° Brix minimum and 24° Brix was reached in 1994.

Winemaking

All grapes are crushed and 3g/hL SO_2 added. No stems are retained in the fermenter which would raise acidity and tannin levels. Active-dry D254 yeast is added at 20g/hL on the day of harvest or day after. A yeast nutrient at 20g/hL is added with the yeast.

The cap is sprinkled twice/day for ½-hour. Maximum fermentation temperature is 30°C during a 12-18 day fermentation in closed 200hL stainless steel tanks. The wine is pressed in a Vaslin plate press when 6-7g/L sugar remains. No press wine is added back to the Prunaio blend. MLF is natural and the wine is racked off the ML lees in February.

First SO_2 addition of 3-4g/hL is made after MLF completion. The wine is moved to French oak (Allier or Troncais) barrels (225L) for one year and is racked once with a mohno pump before the next harvest. Barrels are topped twice/month and free SO_2 is maintained at 80mg/L.

When necessary, the wine receives an egg-white fining (5-10g/hL Ovoclar dried powder) after barrel ageing, and settled 7-10 days before racking. There is a medium pad filter in-line ahead of the filler. At bottling, the wine typically has 30 ppm free SO_2 and 90-100 ppm total SO_2, 0.58-0.70 TA, and 3.3-3.4 pH. After bottling, bottles stand upright four days, before storing horizontal (4-6 months) until labeling upon shipping order.

FLORA SPRINGS

St. Helena, CA
Ken Deis, winemaker
Clonal selection: Sangiovese Grosso
Budwood source: Robert Pepi and Rodeno

Style

A spicy wine with cranberry, blueberry notes, approachable fruit, and quaffable flavors is the stylistic goal. Because of its high-toned fruit character, it is believed that the wine has a fairly short ageing potential.

Vineyards

Two fruit sources are four years old and planted in an east-west direction. Napa Valley vines are on 110R rootstock and spaced 8.5x5.5 feet, 926 vines/acre. Pope Valley vines are on 5BB rootstock, spaced 10x6 feet, 726 vines/acre.

Pope Valley vines are grown organically and are given only two sulfur applications. Soils are Bale gravelly loam with Maxwell clay subsoil. These vines are trained on a six-wire vertical cordon system that is spur-pruned. In Napa Valley, where the soils are Bale clay-loam, a cordon system has a modified vertical trellis with a short cross-arm at the top. Pruning leaves short canes.

Mid-summer leafing is the only canopy manipulation.

Due to minimal experience with Sangiovese, Deis offered the 1992 harvest parameters of 23° Brix, 0.52TA, and 3.5pH. Sugar levels and juice flavors are of prime importance.

Winemaking

Immediately after crushing, the must is inoculated with Pasteur Red yeast. Fermentation completes in five to seven days with peak juice temperature at 80°F. The cap may be punched down in ½ ton picking bins or pumped over in closed 8x8-ft. fermenters, two to three times daily for 15 to 30 minutes.

At 10° Brix, a mixed MLF culture is added. The wine is pressed at dryness and all press wine is used. Racking off ML lees is done as soon as MLF is complete and 50 ppm SO_2 is added.

The wine is barrel-aged in new to four-year-old French oak for 10-12 months. Three or four rackings are done and SO_2 is maintained at 20-25 ppm free.

The wine is bottled unfined and unfiltered. It is bottle-aged before release.

Marchesi
ANTINORI
PÈPPOLI
BADIA A PASSIGNANO

Florence in Chianti, Tuscany, Italy
Technical agricultural/enological team:
Alberto Antonini, Renzo Cotarella, Andrea Paoletti
Proprietary names: Peppoli Chianti Classico, Badia a Passignano Chianti Classico Riserva
Clonal selection: Sangiovese
Budwood source: Mass and clonal selection from Antinori estates
Blending varietals: 10% other typical Chianti varietals

Style

The Peppoli has typical floral aromas of violets and iris along with a complex, vanilla bouquet, good body with round tannins. Overall, it is well-balanced and rich in flavor. The Badia a Passignano has typical Sangiovese flavor with hints

of violet and complex vanilla bouquet.

The Peppoli is styled to age from two to five years, while the Badia a Passignano Riserva can age up to 15 years, in great vintages.

Vineyards

The Peppoli estate and Badia a Passignano estate in Chianti Classico (near Florence) have 5 to 25-year-old vines on 420A rootstock planted 2.8mx1m (planting density of 1,490 vines/acre). A natural cover crop between the rows is mowed one or twice/year.

A unilateral cordon (60 cm above ground) and 70-80 cm in length, is pruned to four spurs and eight buds total. The canopy is manipulated by vertical shoot positioning, removal of weak shoots, leaf thinning, and cluster thinning (at the end of August, 30-40 days before harvest, if necessary). Yield is 2.5 tons/acre.

Typical Galestro soils are shallow, calcareous, and stony with little clay. Average rainfall in a great vintage is 600mm.

Grapes are harvested about 22° Brix, 0.70 TA, and 3.2 pH, however flavor, polyphenols, anthocyanins, and skin pigmentation are the most important criteria.

Winemaking

Destemmed and crushed berries, with 50ppm SO_2 added, are fermented in open-top fermenters (60-hl capacity) with yeast inoculation. There are two pump-overs daily of 30 minutes with a piston pump. Fermentation lasts 10-14 days with a peak juice temperature of 30°C (86°F). About 5% of press wine is added back. MLF proceeds without inoculation.

The wines are blended and Peppoli is transferred to 50hL, 15-year-old Slavonian oak casks for four months. The Badia a Passignano goes to one to three-year-old French and Austrian oak, 225L and 500L barrels for 16 months. The Badia wine is racked every 3-6 months with free SO_2 levels maintained at 25 ppm.

Near the end of the barrel regime, wines are given an egg white fining. Peppoli is bottled 16 to 18 months after harvest and Badia is bottled a minimum of 20 to 24 months after harvest. Peppoli is released six months after bottling, while the Badia is given one year bottle ageing before release.

IL GREPPONE MAZZI

Greppone in Montalcino, Tuscany
Mauro Orsoni, winemaker
Clonal selection: Sangiovese Grosso (100%)
Budwood source: Selection Massale from Montalcino

Style

The wine, a Brunello di Montalcino Riserva sold five years after harvest, has intense aromas of violet and spice. As the wine ages, it develops aromas of leather, tobacco, and dried roses. It is an ample wine with pleasurable finish that will age 5-10 years.

Vineyards

Il Greppone Mazzi is produced from a 19-acre parcel of 20-year-old vines on 420A rootstock, adjoining the Biondi-Santi estate at 500 meters elevation. Soils are clay marl and limestone.

Vines are spaced 2.9mx1m (1,360 vines/acre). A cordon system has three pairs of shoot and spur pruned to 3-4 buds/spur (average of nine buds/vine). The cordon is replaced every five or six years. Yields are controlled to 7-7.5 tons/ha with short pruning and green harvesting (cluster thinning and leaf removal halfway between set and veraison), and leaf removal after veraison. A recently planted block of vines is spaced 2.8mmx0.8mm (1,760 vines/acre).

Harvest parameters average 24.3° Brix, 0.70TA, and 3.2pH. Acidity, polyphenols, anthocyanins, and tasting are also important considerations. Weekly sampling starts Sept. 15 with berries removed from the same vines and tasted for the balance of sugar and acidity and analyzed for sugar, acidity, and pH.

Winemaking

Crushed fruit receives 3-5gm/hL SO_2 and yeast is added. Total skin contact lasts approximately 15 days in closed-top 70hL fermenters with peak juice temperature of 29-30°C. The cap is sprinkled twice daily with ½ of the fermenter volume.

Once dryness is achieved, the wine is pressed and when necessary, *Leuconostoc oenos* added. No press wine is used. Racking off the ML lees occurs in January and the wine is transferred to 20-50hL Slavonian oak casks ranging in age from 1-10 years. Wine is racked twice yearly in February and September during its 42-month minimum cask ageing regime. Free SO_2 levels are kept at 25 ppm.

The wine is egg white-fined upon removal from barrel and is racked off the fining agent after seven days. An 1.2µ membrane filter is ahead of the filler. The wine ages 12 months in bottle before release.

TENUTA LODOLA NUOVA

Ruffino Tuscan Estates

Vino Nobile di Montepulciano
Mauro Orsoni, winemaker
Clonal selection: Prugnolo Gentile (a clone of Sangiovese Grosso) [80% of blend]
Budwood source: Estate selection
Blending varietal: Canaiolo Nero (10% of blend), 10% option of Malvasia Nera and Mamola

Style

This is a blended wine with two years of wood ageing and is sold three years after harvest. Rich and complex with concentrated flavors of ripe fruit and spice, it has good length and finish. A tightly structured balanced wine shows a supple finish and soft tannins. Optimum consumption is 3-6 years of age.

Vineyards

In 1990, Ruffino purchased an existing 47.5-acre vineyard with 5BB rootstock and has retrofitted the vineyard by shortening the pruning. Vines (15-20 years old) are planted at an altitude of 350m in an east-west exposure. Spacing is 2.9m x 1.5m in clay and sands with organic and marine deposits.

The trellis system is the little Tuscan arch (described under Nozzole). Green harvesting is done to control yield to a 5.2 tons/hectare average.

Harvest criteria is the same as other Ruffino Tuscan estates.

Winemaking

A new, more gentle stemmer/crusher with rubber paddles has replaced a vertical stemmer/crusher to crush all grapes with under 5g/hL SO_2 added. Yeast is added to 10-200hL stainless steel fermenters where the juice temperature peaks at 29-31°C during a total

skin contact of 15 days. The cap is sprinkled twice/day with ½ of fermenter capacity for first three or four days and then once/day.

Natural MLF occurs. Sometimes press wine is added to add tannin and improve the ageing potential. Starting in January after harvest, the wine is aged in 50hL Slavonian oak casks for two years. The wine is racked three times in the first year and twice in the second year and the free SO_2 is maintained at 4-5 g/hL. The blend is made after cask ageing.

The blend receives an egg-white fining and there is a 1.2µ membrane ahead of the filler. The wine receives a minimum of four months bottle ageing before release.

NOZZOLE
Vigneto La Forra

Greve in Chianti, Tuscany
Mauro Orsoni, winemaker
Vineyard source: Vigneto La Forra
Clonal selection: Sangioveto (90%)
Budwood source: Estate selection
Blending varietals: Canaiolo and Colorino (7% of blend), Trebbiano and Malvasia (3% of blend)

Style

This Chianti Classico Riserva is sold three years after harvest with intense aromatics of violets and spice in the Chianti Classico style. When the wine is aged, it develops leathery, tobacco-like, and dried-rose qualities. It will drink optimally for three to 10 years.

Vineyards

The 1,250-acre Nozzole estate is situated just north of the town of Greve in the heart of the Chianti Classico zone. Vines averaging 15 years old on 5BB rootstock, spaced 2.9mx1m (1,360 vines/acre), are grown on south-facing slopes with a clay and calcareous soil profile. A new planting on 420A rootstock is spaced 2.4m x 0.8m.

Vines are trained on a three-wire vertical trellis and have a Tuscan arch (one arched cane/vine with 5-7 buds). Yields are controlled to 6.5 tons/acre by short pruning and green harvesting.

Harvest parameters average 24.5°Brix, 0.78 TA, and 3.3pH with the same sampling technique as described under "Il Greppone Mazzi."

Winemaking

Grapes receive 30 ppm SO_2 at the crusher. Juice inoculated with yeast is fermented in 50-150hL closed-top fermenters. The cap is sprinkled twice/day (½ of fermenter volume). Total skin contact is 15 days with a maximum juice temperature of 29-30°F.

Leuconostoc oenos is added when necessary and the wine is racked off the ML lees in January.

The wine is egg-white-fined before a 30-month oak ageing program beginning in February. The wine is placed in 225L new to 3-year-old Allier oak barrels for six months with a series of intermediate rackings. Then the wine is put into new to 10-year-old Slavonian oak casks (30-hL to 60-hL capacity).

An 1.2µ membrane filter is ahead of the filler. After three years, the wine is bottled-aged 10 months before release.

VITIGNO TOSCANO
Seghesio Winery

Healdsburg, CA
Ted Seghesio, winemaker
Clonal selection: Sangioveto
Budwood source: Sangioveto planted in 1915

Style

Vitigno Toscano offers blackberry, cherry, currant fruit with lingering spice and dried flowers notes is desired in a wine that has a seven-year ageing potential.

Vineyards

Eight and nine-year-old vines on St.George rootstock are grown in the Alexander Valley of Sonoma County. They are spaced 6x10, 704VPA along east-west directed rows. Gravelly, loam soil runs about four feet deep.

Vines are trained on a T-top trellis with one vertical catch wire. They are cordon-pruned to two canes with seven spurs/cane. Leaf pulling shortly after bloom and minimal cluster thinning are the canopy management techniques employed. Yields are 3-4 tons/acre.

Typical harvest critera is 23-23.5° Brix, 0.85 TA, and 3.35 pH. Cluster uniformity and berry flavors are the most important criteria.

Winemaking

The must is inoculated with M2 yeast 36 hours after destemming.

A nine to 18-day fermentation, where peak juice temperature reaches 87°F, is done in both open-top fermenters (4x10x6ft.) and closed-top (12x12ft.).

The cap is sprinkled four or five times/day for 60 minutes. Pressing is done in three to nine days past dryness. Press wine is added back, depending on the quality.

Once fermentation completes, a 2% MCW inoculum is added. Wine is racked off the ML lees in two to three months. Once MLF completes, 25 ppm SO_2 is added.

Wine is transferred to new to three-year-old 60gal Slavonian oak for nine to 12 months. Only one racking in spring is done and 25 ppm free SO_2 is maintained in barrel.

Before bottling, approximately one year after harvest, minimal filtration is given with a 1.0µ filter. There is six months bottle ageing before release.

Shafer
FIREBREAK®

Napa, CA
Elias Fernandez, winemaker
Clonal selection: Sangiovese Grosso
Budwood source: UCD experimental station, Robert Pepi and Rodeno
Blending varietal: Cabernet Sauvignon

Style

Firebreak Sangiovese offers aromas of spices and black pepper with hints of black licorice and earthy undertones. On the palate, it is full of bright cherries with an intense, chalky, mineral-like tannin that coats the entire mouth.

It is expected that the wine will age eight to ten years.

Vineyards

Shafer Vineyards are in the Stags Leap District of Napa Valley. Vines are five years old on 5C, 110R, and AXR-1 rootstock. Vine spacing is 6x9, 800 vines/acre in all directions following the contour of a circular knoll. Soils are shallow with rocky, volcanic origin subsoils.

The trellis system is one fruiting wire

with two sets of vertical catch wires. Vines are cordon-pruned to 18 to 20 two-bud spurs. The canopy is managed with leafing and fruit thinning as needed to yield four tons/acre.

Harvest parameters on average are 23.5° Brix, 0.72TA, and 3.42pH. Grape flavors and vine condition are the top considerations made at picking.

Winemaking

The must is inoculated one day after crushing with Prise de Mousse ADY. Fermentation lasts five days in closed-top fermenters with the juice temperature reaching a maximum of 80°F.

The cap is sprinkled four times daily for 20 minutes. Half-way through the fermentation, a 10% inoculation of ML34 and MCW malolactic bacteria is made. Pressing is done anywhere between 2° Brix and dryness. Once MLF is complete, wine is racked off the ML lees and the first SO_2 addition of 50 ppm is made.

Wine is transferred to 33% new Nevers and Troncais oak barrels for 14 to 16 months. In barrel, SO_2 is maintained at 25 ppm free. Wine is racked quarterly.

Blending with Cabernet Sauvignon (picked at 23.5° Brix) is done as early as possible. The wine is unfined, but is given a light filtration before bottling when the wine completes the barrel regime. Release is 6-7 months later.

Silverado VINEYARDS

Napa, CA

Jack Stuart, winemaker

Clonal selections: UCD2, UCD3

Budwood source: UCD, Rodeno and Steltzner

Style

A wine with spicy, cherry/cranberry fruit, cedary, and tarry elements is the goal. Medium tart flavors are desired along with a medium body, silky texture, mincemeat, cherry, spice, and tarry elements.

The wine has potential for complexity and balance. It is too early in the learning curve to comment on the ageability of Silverado Sangiovese.

Vineyards

Vines are planted at Silverado's Mt. George and Soda Creek vineyards. They are four years old on 5C and 420A rootstock. Spacing is 5x11, 792 vines/acre, and rows are directed east-west.

Soil at the Mt. George site are Coombs gravelly loam, volcanic Tufa. At Soda Creek, it is red cobbly loam and Cortina gravelly loam.

A lyre trellis is pruned 18 to 20 spurs/vine with one to two buds/spur. The canopy is manipulated by using movable wires for shoot positioning. Basal leaves are also removed.

Because vineyards are so young, Stuart declines to state yield, but he is looking at the following picking parameters: 23-23.5° Brix, 0.71-0.75 TA, and 3.16-3.33pH. Color, flavor, and sugar levels, in that order, are the most important picking criteria.

Winemaking

Inoculation with Pasteur Red yeast is done in tank after crushing. Fermentation in open-top fermenters (4x4x3) completes in seven days with peak juice temperature of 85°F. Inoculation for MLF is done when the juice temperature in the fermenter is about 75°F. A built-up Wine Lab culture is added at one gal/0.50 ton. When MLF is finished and lees are settled, wine is racked off and the first free SO_2 addition of 40 to 50 ppm is made.

Wine is transferred to one-year-old center of France cooperage for eight months. In barrel, free SO_2 levels are 25-30 ppm. Rackings are made every 3-4 months.

Wine, bottled in May following harvest, was given a DE polish filtration and a membrane is in-line to the filler. Bottle ageing of 15 months is given pre-release.

SWANSON

Rutherford, CA

Marco Cappelli, winemaker

Clonal selection: Sangiovese Grosso

Budwood source: UCD and Robert Pepi

Blending varietal: Cabernet Franc

Style

Plum, sour cherry, cranberry, raspberry, blackberry, mint, menthol, rhubarb, spice, and violets are all aromas sought in Sangiovese. These characteristics should carry through as flavors in addition to dried cherries and vanilla elements from oak ageing.

The wine should showcase bright, rich fruit character and be marked by early drinkability with low tannin levels.

Vineyards

Six-year-old vines, on SO4 rootstock in a vineyard on the Oakville Crossroad are spaced 8x12, 454 vines/acre in north-south row direction. Soils are Yolo fine, sandy loam, rich, and very vigorous. Vines produce abundant fruit, but also significant growth.

A GDC trellis and quadrilateral cordon, pruned two buds/spur, 60 buds/vine along with fruit drop after veraison, control yields to five tons/acre. The canopy is managed by shoot thinning after set and leaf pulling just before veraison.

Average harvest parameters are 24° Brix, 0.75 TA, and 3.47pH with the most important being TA followed by Brix.

Winemaking

Three days after crushing, Pasteur Red yeast is added to the must in closed-top fermenters measuring 10 feet high and six feet wide. Fermentation lasts 10 days with maximum fermentation temperature at 90°F. A post-fermentation maceration of two weeks occurs.

Inoculation for MLF with the MCW strain is done after primary fermentation. Wine is racked off the yeast lees at end of MLF. A first addition of 20 ppm SO_2 is made two weeks later and wine is pumped to combination of new to five-year-old French and American oak barrels. During the 12-month barrel ageing, wine is racked twice with free SO_2 levels maintained at 15 ppm.

In the 1991 wine, about 15% Cabernet Franc (picked at 24° Brix) was added.

The wine receives only a rough filtration before bottling in January or February of the second year. It is bottle aged five months before release. ■

Sangiovese excites an American chef

by Eleanor & Ray Heald

Sangiovese and Italian food — a first thought. It's simple, easy, and it works, but what about a broader horizon? ***PWV*** talked to Brian Polcyn, the 34-year-old chef/owner of Acadia restaurant, located opposite the sports/entertainment complex known as the Palace of Auburn Hills, MI. He suggests Mediterranean-influenced matches with an American flair — his specialty — to harmonize with the Sangiovese and Chianti wines discussed in ***PWV***'s latest varietal review (see page 29).

Polcyn has been recognized in *Gourmet* magazine, the *New York Times*, and *Cooks* magazine. He is pictured monthly in Northwest Airlines *World Traveler* magazine as one of the team of chefs who created the new in-flight food service for Northwest Airlines. His dishes, many prepared in a wood-burning oven, offer imagination and color which are as pleasing to the eye as they are to the palate.

Comparing California Sangiovese wines with Italian Chianti, Polcyn says, "Italian Chianti tastes richer and more mature. I understand that the California wines are produced from much younger vines, but to design food matches, it's important to make this distinction up front.

"Chianti impresses me with tobacco, cigar box, olive, and anise qualities. These are not bright fruit characteristics which are better-illustrated by California Sangiovese. There are tie-ins and cross-overs that can, however, be made by the proper food relationships."

Seafood matches and mismatches

Seafood items that Polcyn likes with Pinot Noir, such as charred or pan-seared tuna with caramelized onions work well with Sangiovese. But, a Sun-Dried Tomato-Glazed Salmon with Corn Sauce and Chive Orzo is no match at all, though. "I made a big mistake here," he says. "Salmon does not work with Sangiovese. Actually, I was surprised. The oil from the fish did not harmonize well with any of the wines. The chive orzo was fine, but the salmon just turned me off."

A rock shrimp ravioli works well, however. "It's clear that pasta in a creamy seafood preparation will succeed," Polcyn says. "Pasta and red wine is a given good match. A rich, creamy, depthful, not acidic sauce flavored from sautéed shrimp shells, offers a stage for a Sangiovese wine to perform magic in the mouth."

"As you see, it is a wine with incredible balance."

But on the other hand, an acidic pasta with lemon and basil, for example, is a mismatch.

Cheese and country-style food

Baked Buffalo Mozzarella on country-style bread with pesto is a delicious appetizer with Sangiovese. The cheese is melted to room temperature and the bread is thick and crunchy outside with a soft center absorbing the pesto. This pairing also works with a crisp salad as a light, luncheon offering.

Staying with a cheese theme, Polcyn suggests a Grilled Vegetable Terrine with Goat Cheese. "I think this is a knockout especially with the Seghesio Vitigno Toscano," he says. "The Seghesio is a lighter wine with strawberry, cherry fruit that matches well with grilled vegetables and goat cheese. An earthy sharpness from the goat cheese bites through the vegetables and balsamic vinegar in the preparation and strikes an interesting contrast to the big fruit element of the wine."

Gorgonzola is a Polcyn favorite with Sangiovese-based wines. "The killer recipe is Baked Fennel Sausage with Potato Dumplings and Gorgonzola Cheese," he contends. "You just have to try this one to believe it."

A passion for wood roasting

Polcyn's favorite match to Chianti in general is Wood-roasted Duckling with Red Currant Sauce. He also likes this dish with the Estancia Estates Sangiovese, a wine he describes as having a bigger style with less overt fruit.

He also wood-roasts leg of lamb and serves it with natural juices, garlic-whipped potatoes, and in tune with the Mediterranean theme, an eggplant puree. "This and the duck are perfect with Brunello and the less-fruity California wines because of the more forward meat flavors. Contemporary preparations work better with fruitier California Sangiovese."

The wood-roasting thrust of Acadia restaurant has Polcyn focusing on smoked aromas and flavors. He demonstrates the harmony of Sangiovese with Smoked

The refinements keep coming.

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Ham and Black Olive Pasta. "This is sensational with Italian Chianti, but the smokiness downplays the fruit of California Sangiovese and strikes a better harmony with a Mediterranean theme illustrated by black olives, This is really evident with the Swanson Sangiovese."

Polcyn creates a similar illustration with Wood-Roasted Wild Mushrooms and Extra Virgin Olive Oil. Roasting mushrooms in a wood-burning oven creates earthy tastes, Polcyn explains. Intense heat pulls out natural sugars and quickly caramelizes the mushrooms slightly. With garlic and olive oil, these mushrooms are exceptionally delicious and strike a good harmony with California Sangiovese.

"It was easiest for me to create food matches for wines blended with less or no Cabernet Sauvignon," Polcyn concludes. "When the wine hangs alone, the Cabernet doesn't stand out as much. When you put it with food, however, it tends to take over and covers up the delicate character of Sangiovese." ■

❦

Baked Fennel Sausage with Potato Dumplings and Gorgonzola Cheese

Serves 12

Fennel Sausage
(yields 2 pounds)

Ingredients:

½ pounds pork butt
1 tablespoon chopped garlic
¼ cup Semolina flour
1 tablespoon salt
1 tablespoon cracked black pepper
1 tablespoon coarsely ground fennel seed
4 oz bacon
¼ cup ice water

Procedure:

Grind in meat grinder with ⅜-inch plate and stuff into sausage casings.

Potato Dumplings

Ingredients:

2 pounds potatoes (skin on)
¼ cup flour
1 egg
salt and pepper

Procedure:

Boil the potatoes in their skin until very soft. Drain. When potatoes are cool enough to handle, peel, and push them through a sieve or potato ricer. In a mixing bowl, combine potato, egg, and flour. Season with salt and pepper. Place mixture on a floured surface, roll into ½-inch logs. Cut into 1-inch pieces or shape in the traditional manner of Italian gnocchi. Drop dumplings into boiling water. When they float, drain and rinse under cold water.

Gorgonzola Cream
(yields three cups)

Ingredients:

4 cups heavy cream
8 oz Gorgonzola cheese
4 oz butter
salt and pepper

Procedure:

Bring the cream to a boil. Reduce by ⅓. Whip in Gorgonzola and butter. Season with salt and pepper. The mixture should be slightly thick. Be careful not to over reduce.

Assembly of dish:

Saute the sausage in olive oil. Add the dumplings. Saute one to two minutes. Add Gorgonzola cream. Simmer until dumplings are hot. Place on serving dish. Sprinkle with dry bread crumbs. Gratinee under broiler.

Grilled Vegetable Terrine with Chevre and Avocado Vinaigrette

Avocado Vinaigrette

2 ripe avocados
1 lime, juiced
1 tablespoon shallot, chopped fine
1 teaspoon garlic, minced
¾ cup olive oil
1 fresh jalapeno, minced
¼ cup heavy cream

Combine all ingredients, puree in blender until smooth, set aside.

Balsamic Vinaigrette

2 tablespoons olive oil
2 tablespoons canola oil
2 tablespoons balsamic vinegar
2 tablespoons dijon mustard
1 teaspoon garlic, minced
1 teaspoon shallots, minced
salt and pepper

Combine all ingredients in bowl. Mix well.

Terrine

1 eggplant
2 large carrots, peeled
2 red peppers, roasted, seeded, and peeled
2 yellow squash
2 zucchini
4 oz fresh shiitake mushrooms
½ cup balsamic vinaigrette
1 tablespoon gelatin
4 tablespoons water
8 oz goat cheese
olive oil

Slice all vegetables ⅛ inch to ¼ inch thick. Season with salt and pepper. Toss in olive oil and grill until tender, but not black. Bloom the gelatin in the water. Dissolve over heat. Add to the Balsamic Vinaigrette and set aside. Whip the goat cheese in food processor until smooth. Line terrine mold with plastic wrap. Line with eggplant, then brush with balsamic vinaigrette. Layer zucchini, brush again and so on with the goat cheese in the center. Refrigerate two hours before cutting. Serve with black olives, fried basil leaves, and Avocado Vinaigrette. ■

USING OAK SUCCESSFULLY

Dispelling the over-oaked myth

by Gary Baldwin

Whether to use oak and for what period of time are critical questions for every producer of premium wine.

Using oak in white wine

As a consultant, I continually attempt to convince clients that the purchase of new oak is absolutely essential if they wish to make wines that can be sold at the top end of the premium market. But clients argue that there is a trend towards less oak, so why should they go to the expense?

Should you, as a winemaker, continue to purchase new oak for Chardonnay or follow what appears to be a new trend and opt for an unoaked style?

The answer to these questions is: don't confuse two issues. The first issue is one of wine style and the second is one of cost.

To succeed in making a premium non-oaked style, the base wine will need to have plenty of fruit aroma and flavor, and both will need to be reasonably obvious, because the wine will be sold early in its life and will probably have no time to develop.

The issue of cost is important but should be secondary. If cost becomes the primary reason for the decision and the fruit flavor is overlooked, a second rate wine will be the result. So, if you intend to make a non-oaked Chardonnay, do it for the right reasons.

There seems to be no real argument about red wine's need for oak. Very few successful red wines are marketed without oak. In fact, I am hard pressed to think of one. But there is a continual argument about oak's role in white wine.

On the other hand, many of the great white wines of Australia have never seen oak: Hunter Semillon and the famous Rieslings of Clare and Eden Valley immediately come to mind. The early Char-

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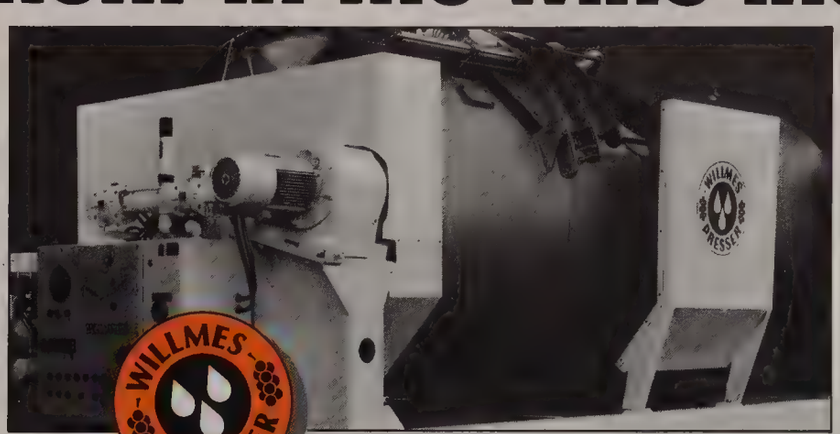

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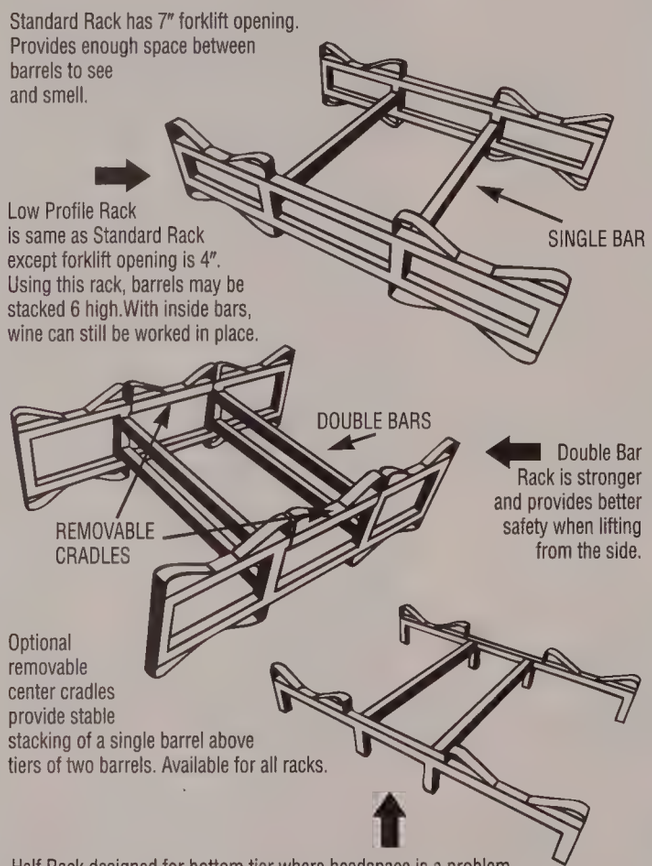
Standard Rack has 7" forklift opening. Provides enough space between barrels to see and smell.
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donnay wines made in Australia had very little contribution from oak, but more recently, the full-bodied, oaked Chardonnay has become the country's mainstream white wine.

To this extent, it has been possible for some wine companies to successfully market a non-wooded Chardonnay as a "new style." Woodleys, Queen Ade-laide, T'Gallant, and Plantagenet seem to be very successful examples of this new unoaked style.

Using oak correctly

The majority of mainstream brands in the premium quality wine market have a significant impact from oak, it is almost always good quality oak and it achieves flavor enhancement by barrel fermentation and/or long maturation in the barrel. The oak is well-integrated and is part of the flavor profile of the wine, not the dominant character.

But, as the price of the wine drops below $12Aus ($9.30US) per bottle retail, oak's contribution becomes increasingly important. This is partly because the intensity of fruit flavor drops off, and partly because of the use of oak chips, and other methods, which impart a more obvious oaky flavor than does barrel fermentation or ageing in oak barrels for many months. This obvious oaky flavor is not as attractive as the more subtle flavors derived from barrel ageing or barrel fermentation.

The mainstream wines at high prices are generally fermented in barrels to soften and add complexity to the wine. Many of them are made even more complex by malolactic fermentation.

To achieve the correct concentration of oak flavors, between 20% and 33% new oak barrels will be used with a similar amount of one-year-old, two-year-old, and so on. It is a common observation that wines fermented in new oak barrels have a pretty or lifted aromatic character, but the better flavors all round are often found in the one- or two-year-old barrels.

But what does all this go to prove? Simply that oak can have a very positive influence on wine flavor if used correctly. The great white wines of Burgundy have been a testament to this for years. But, if the quality of the oak is not good or the residence time in oak is insufficient, the resulting wine will suffer accordingly and will usually appear raw and sappy with obvious simple oak aromas.

In defense of fruit flavors

Sauvignon Blanc and Semillon styles often cause a great deal of discussion when it comes to deciding on whether to make oaked or unoaked styles. I must admit to a bias towards the attractive fruit flavors and therefore if the fruit flavors are good enough, I would usually suggest a fruit-driven wine without the added complexity of oak.

This also allows a point of difference as most wineries that make one of these wines also make a Chardonnay which is usually oaked. But when the wine lacks fruit lift, a small amount of oak either from barrel fermentation or from oak maturation can often improve the wine substantially.

Using oak chips

Careful use of chips can be considered, provided they aren't used within three weeks of bottling — last minute oak chip addition can lead to ellagic acid deposition. This forms a semi-crystalline material, usually slightly yellowish in color (in white wines), which will detract substantially from the appearance.

While on the subject of chips, the best flavors are usually derived from the use of commercial preparations of oak chips

which have been toasted. Their use also avoids the potential hazards of oak shavings which can easily pick up off-flavors if not collected, handled, and stored properly.

The over-oaked myth

It has become trendy in the wine business in Australia to use the throwaway line "over-oaked" when discussing wines that seem to have an excess of obvious oak. What do people mean by over-oaked?

I submit that they are really saying that the oak contribution is too obvious for the fruit, that is, the wine is really "under-fruited!" I have never really come across an over-oaked wine, except in the case of wines to which chips have recently been added.

Winemakers often tell a story that goes like this: "The wine has been in oak for three months and already it appears too oaky. Therefore, it must be removed from the oak since we do not want it to become over-oaked, and so we have decided to bottle it."

My response is usually: "Leave it in oak for another three months and have another look — it will have softened significantly." If the wine is is bottled in the raw, oaky state, it will stay like that for some time. This is especially true for Pinot Noir.

Often at an early age in new oak, Pinot Noir will seem all awkward and hard with very little sweet fruit flavor. But if you are patient and leave it in oak, you will see a marked improvement. The difficult part is knowing how long that will take. It may be six months, it may be nine months, or sometimes even longer.

If it were possible to over-oak red wines, Chateau Margaux's wines would have to be candidates; the wine is aged for 12 months in new oak and 12 months in one-year-old oak, then in bottle for at least one year.

The significant factors in Margaux's success with this technique are: the wine has a high concentration of tannin; the time in oak allows plenty of time for all the reactions of ageing phenolics and tannins to occur; and finally, the year or more in bottle is important and should not be overlooked.

Patience is essential

A favorite Australian habit is to bottle on Monday and sell on Wednesday, leaving Tuesday as bottle maturation day. The resulting wine sells out in three months and everyone is happy! Or are they? The winemaker then tastes a bottle one year after bottling and thinks how much the wine has improved, but the customers who bought the wine have drunk it all months ago and very few of them will ever see it at its true potential.

It must be said that these comments apply more to small producers, as many large companies go to considerable lengths to ensure that the bottles released onto the marketplace are ready to drink, and very often, it may not be a good idea to hold these wines for too long before drinking. But in my experience, such patience is uncommon among the small wineries and often their wines are consumed well before they should be.

Oak flavors and aromas are essential aspects of many fine wines, but to achieve great quality when using oak, ensure that the oak is good quality and that the wine is in the oak long enough to lose the initial harsh oaky flavors and is allowed to develop to its full flavor potential. ■

Gary Baldwin operates Oenotec Consulting Services in Australia. This paper was originally published in **The Australian Grapegrower & Winemaker**, *July 1994, and has been edited.**

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Canton offers a wide variety of styles to meet the needs of a diverse wine industry. Choose from 225-liter Bordeaux, Burgundy, or Chateau Ferré (thin stave), or 300-liter Hogshead styles. Other choices include three toast levels, heads toasted, and long air-dried wood from three separate U.S. forest regions, quarter-sawn in our own mills.

Consistent quality is designed into Canton barrels. We begin with quality standards based on ISO 9000 international guidelines. These international standards insure the highest possible quality of many manufactured products. Using these, we consult frequently with our three mills to monitor their adherence to our needs.

In the cooperage, objective measurements are made frequently at a number of stages in the coopering process. All staves and heading are measured for moisture levels prior to use. Oak toasting, while using the traditional oak fires, combines time and temperature measurements to ensure uniformity of toast levels. Finally, a rigorous check is made to see that each barrel conforms to the standards before it is shipped.

Our barrel standards were designed around two premises. First, that we are constructing a food-grade product, so the highest standards and procedures must be utilized. Second, with all the variables of winemaking, we want our barrels as consistent as possible, within the constraints of using wood, a natural product.

This consistent quality has resulted in extremely positive tastings for many wineries, with a wide variety of wines and winestyles.

For a full range of barrel products and quality by design, contact: **Canton Cooperage**, tel: 1-800/692-9888.
Please see our ad, page 25.

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Blue Grass Cooperage practices good environmental management, utilizing the entire tree. Once the tree has been selected, it is logged, quartered, and then cut into staves and heading material.

We are continually upgrading our equipment, such as our new state-of-the-art thin-blade band saw. This gives us a 20% gain in usable wood.

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For more information, contact: Raymond Willmers, **Blue Grass Cooperage Co.**, 585 5th St.West,#211, Sonoma, CA 95476, tel: 707/939-9790, fax: 707/939-9791.
Please see our ad, page 8.

TONNELLERIE MERCIER

From a family of grapegrowers and viticulturists, Francis Mercier founded his cooperage in 1960. This longtime Master Cooper oversees production of almost 10,000 barrels/year bearing his name in his workshop in the medieval village of Barbezieux equidistant between Cognac and Bordeaux.

All traditional French coopering methods are employed. The oak is very carefully selected from the forests of Allier, Troncais, Nevers, Limousin, and Vosges. Staves are hand-split for increased strength and better tightness. The oak is air-dried for 20 months and the moisture content of the oak is about 14% before it is worked. Barrel staves are bent and shaped very slowly when they are truly supple over an open fire. It takes about

45 minutes to form a barrel.

The "toasting" is a second step after the barrel is formed. The deeply penetrating caramelization which results from toasting produces an exceptionally rich and flavorful barrel — with a hint of "ginger bread" and "bananas." The toast level (medium, medium plus, or heavy) is very even throughout, enhancing the richness and elegance of the oak, and at the same time, does not overpower the varietal character of the wine contained in the oak cask.

Tonnellerie Mercier offers the complete range of cooperage styles: Bordeaux Château, Château Ferre, Bordeaux Export, Burgundy Export, Cognac casks, and 500-liter puncheons.

After-sales service is guaranteed on all Mercier barrels for one year to warrant against defects in materials or workmanship.

Philippe Petit, sales and export manager at Tonnellerie Mercier, is an enologist trained at the University of Bordeaux. He provides an excellent link between the winemaker and cooper to better serve the winemaker and tailor Mercier barrels to the varied specifications of each winery. Petit makes several yearly visits to Mercier customers in the U.S.

U.S. customs fees are included in all prices, and full container loads (138 barrels) are delivered FOB winery.

West coast distributor for **Tonnellerie Mercier** *is:* Stefanich, 87 Rockaway Ave., San Francisco, CA 94127, tel: 415/665-1885, fax: 415/665-1883.

East coast distributor is: Liliane Recht, Rt. 2, Box 756, Montross, VA 22520, tel: 804/493-9186, fax: 804/493-0435.

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"Original ideas are few" and most are not effective tools to save time or money. Innerstave is the original barrel insert and is an effective tool for flavoring wines that has proven, for 15 years, to save barrel budgets and reduce delivery time of oak cooperage.

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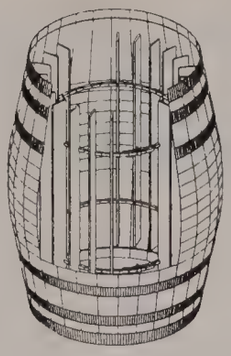

wines. Designed to deliver the flavor of new oak barrels, Innerstave can be the winemaker's most effective flavor and blending tool by allowing for selection of any "wood to wine ratio" in all types of barrels or tanks into which it is installed.

Oak type selection for each wine variety gives the winemaker unlimited control of the oak flavor components in designing the taste of the finished award-winning wine. Innerstave sources oak from many geographical locations such as France, USA, Latvia, and even local Oregon oak. This worldwide sourcing allows for broad flavor possibilities.

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Inquiries to: **Innerstave,** Bob Rogers, 24200 Arnold Dr., Sonoma, CA 95476, tel: 707/996-8781, fax: 707/996-1157.

Please see our ad, page 69.

MEL KNOX, BARREL BROKER

Tonnellerie Francois Freres is located in St. Romain, Cote d'Or, France. The Francois family has made barrels for three generations. Right now, their customers include the top wineries in Burgundy, North America, South America, Australia, New Zealand, South Africa, and Italy.

Should top quality viticultural districts develop on other planets, rest assured that the flying saucers will land in St. Romain, not in some cow pasture in Santa Cruz County.

Classic Burgundy barrels, 228 liters capacity, are the specialty of the house, although larger barrels can also be made. Bordeaux-shape barrels are also made on special order.

So in demand are Francois Freres barrels that it is recommended that wineries place orders at least three months before harvest. Why are these barrels in such demand? 1) Quality: very high. We have an excellent stock of wood and an excellent team of coopers. 2) Price: very fair. 3) Service: sensational. 4) Sense of humor: sometimes.

Oaks available include: Allier, Bertranges, Nevers, Vosges, Troncais, and Limousin. Barrels can be toasted to order.

In May, 1994, all barrels were sold out through Halloween. What will it be like in 1995? We'll see.

In October, 1994, all **Taransaud** barrels were sold out through the end of January, 1995. Why is it that Taransaud barrels are among the highest priced, yet most in demand?

1) Excellent wood supplies: Tonnellerie Taransaud has the largest stock of French oak in the business. All wood used for barrels is certified by Bureau Veritas as to the length of seasoning, which can vary between 24 and 36 months. Wood is categorized as being either tight-grained "bois de centre" or wide-grained Limousin. The Limousin is air-dried over three years.

2) Excellent craftsmanship: In 1994, three different coopers at Taransaud won "Meilleur Ouvrier de France" citations. Most cooperages are proud of one such award and Taransaud got three! Every barrel made is toasted to order. Time and temperature are carefully regulated.

With this wonderful supply of wood, Taransaud makes Bordeaux and Burgundy-shaped barrels, puncheons, ovals, and upright tanks of all sizes. One of the most popular barrels is the thin-staved export barrel, à barrel that combines the convenience of export barrels with the thinner staves of chateau barrels.

Taransaud barrels are especially prized for Merlot and Cabernet Sauvignon. Remember, the longer you keep the wine in barrel, the more the quality of the wood shines through!

For more information, contact: **Mel Knox**, 505 29th Ave., San Francisco, CA 94121 tel: 415/751-6306 or 751-6806, fax: 415/221-5873.

Please see our ad, page 63.

BARREL BUILDERS

As the oldest operating cooperage in the western U.S., Barrel Builders continues to expand the products and services offered to wineries throughout the U.S. Leading products include: Tonnellerie

Marchive French oak barrels, an exciting new offering of Hungarian barrels, a full line of small barrels, premium silicone bungs, and a wide range of oak chips from both American and European suppliers.

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The Marchive barrel is a relative newcomer to the U.S., but has a strong following in France, where it used by many of Bordeaux's finest Cognac houses. Marchive produces both Burgundy and Bordeaux style barrels using oak from the major forests of France. Marchive controls the production process from the initial splitting of the oak to placement of their brand.

In 1994, Barrel Builders began distributing barrels from Budapesti Kadar, the premier cooperage in central Europe. Both Burgundy and Bordeaux style export barrels are produced to Barrel Builders' specifications. Barrels are produced from the same species of oak as is grown in the center of France. Initial tastings have been excellent and demand is quickly growing.

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For more information, contact: **Barrel Builders**, PO Box 268, St. Helena, CA 94574 tel: 800/365-8231 or 707/942-4291, fax: 707/942-5426.

Please see our ad, page 65.

BOSWELL COMPANY

Tonnellerie Radoux in Jonzac began exporting French oak barrels to the U.S. in 1984. Radoux is a major stave producer with splitting mills located in the Chateauroux area near the oaks of central France and near Metz in the Vosges forest. An oak stave ageing park in Jonzac contains staves for over 30,000 barrels. After a drying period of 18-22 months, the staves are graded for grain tightness.

Toasting is done over specially designed brazeros (metal cylinders where oak fires are maintained) to allow extended firing time. Radoux pioneered head toasting in 1987.

Tonnellerie Radoux offers a wide range of barrel sizes and Bordeaux or Burgundy styles.

Tonnellerie Radoux U.S.A., located in Rohnert Park, CA, is a mini-version of the parent Radoux cooperage for American oak barrel production, begun in June, 1994. French coopers from the Radoux workshop in Jonzac insure a quality approach. Francis Durand, a "compagnon" (master cooper), currently heads production with two other French Radoux coopers.

American oak staves are a blend from forests in Missouri, Ohio, Wisconsin, Illinois, and Iowa. After the staves are air-dried a minimum of 22 months, barrels are created almost exactly like traditional French oak barrels. Toasting times are longer, due to the density of American oak.

Production is eight to ten barrels/day in Burgundy export, Bordeaux export, or thin stave Bordeaux export. Visits to our French-style American oak cooperage are available by appointment.

Tonnellerie Sirugue is a small Burgundian cooperage in Nuits-Saint-George. Yves Sirugue and his son Alain are third and fourth generation coopers. Only 228-liter Burgundy export and Burgundy traditional style barrels are available.

Oakwood is sourced primarily from center of France forests in Allier and Nevers. Sirugue staves are air-dried 18-24 months. Artifical drying is unknown at this cooperage. Toasting at Sirugue is light-medium, as Yves Sirugue prefers not to "overcook" the barrel.

Clients use Sirugue barrels for their highest quality Chardonnay and Pinot Noir.

For more information, contact: **Boswell Company**, 1000 Fourth St., San Rafael, CA 94901, tel: 415/457-3955, fax: 415/457-0304.

Please see our ad, page 28.

BARREL ASSOCIATES INTERNATIONAL

Barrel Associates International currently produces completely air-dried American oak barrels that are toasted over an oak fire for up to one hour. We have found this seasoning regime, coupled with unhurried attention to toasting, allows the best characters of the oak to marry with your wine.

A new stave-bending option was introduced by Barrel Associates International in 1994. In this new process, the barrel is immersed in hot water for a short period of time before being bent and toasted over an oak fire. Jean Marcel Jaegle of Tonnellerie Dargaud & Jaegle has had great results with a similar technique for many years. The immersion of the barrel in hot water causes the pores of the wood to open, thus allowing the introduction of heat deep into the staves. Since the staves are moist and water is a better conductor of heat than air, we feel this process allows for very deep penetration of heat into the barrel. It is this penetration that allows the oak components to be freed for marriage with your wine.

American oak casks are produced in a brand new 6,000 sq.ft. cooperage in Fresno, CA. Our highly motivated staff has been introduced to the French techniques of barrel making and will make your casks to your specifications as to style, wood type, toasting regime, and toast level.

Our wood is purchased in southern Missouri and northern Virginia and aged where it is milled. Each stave is naturally air-dried. Unlike most cooperages, Barrel Associates International uses no kiln to dry its premium American oak. The minimum air-dry time is two winters in a normal climate. However, when the winters are extremely cold, as in 1993/1994, we will age the wood longer. Three-year-old wood is also available in small quantities.

For more information, please contact: Rich Davis, **Barrel Associates International**, 575 Lincoln Ave., Suite 200, Napa, CA 94558, tel: 800/227-5625 or 707/257-0714.

Please see our ad, page 19.

LE TONNELLERIES DE BOURGOGNE

Le Tonnelleries de Bourgogne is an association of independent coopers that share the same high standards. This association includes Tonnellerie **Billon** in Beaune, Tonnellerie **Damy** in Meursault, and Tonnellerie **Vicard** in Cognac. It offers customers the advantage of combining orders among these coopers for maximum price discounts and shipping consolidation.

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Tonnellerie **Billon** is very highly regarded by producers of Pinot Noir and Chardonnay. Billon barrels complement rather than overwhelm the maturing wine; they add finesse to the structure of the wine and significantly increase the length of flavor on the palate. Jacques Billon believes in respecting the forest origins of the oak as they each add their own flavor nuances to the wine. As owner of Boismerin, the largest producer of oak staves in France, he is able to oversee the entire production process of his barrels to assure outstanding quality control.

Barrels produced by Tonnellerie **Damy** are sought after for their quality and a particular house style that accentuates the character of Chardonnay. You will find Damy barrels in more than 75% of all wine cellars in Meursault for producing the great wines of Mersault.

Barrels produced by Tonnellerie **Vicard** are renown for their quality, and are particularly sought after by producers of Bordeaux varietals and eaux-de-vie. Jean Vicard insists on using only the finest oak staves. He personally selects the oak, together with his stave-purchasing agents, from the best sections of the oak forests in France. Vicard feels strongly that only after three years of air-drying the staves (32 months for thinner ferre staves), that the seasoning process penetrates to the depth necessary to avoid any green phenolic flavors coming in contact with the wine.

Tonnellerie **Lafitte**, guided by consulting master cooper Jean Vicard since 1987 (established about 1900 in Cognac), produces high quality Bordeaux barrels from hand-split French, Hungarian, and American oak.

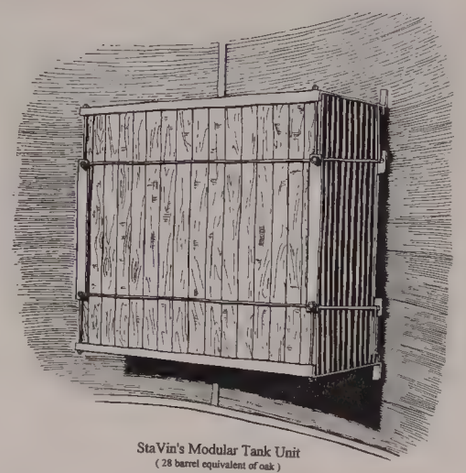
For more information, contact: **Les Tonnelleries de Bourgogne**, PO Box 2322, Napa, CA 94558 tel/fax: 707/257-3582.

Please see our ad, page 59.

STAVIN, INC.

StaVin, Inc. supplies the wine industry with a full line of high quality alternative French oak products for barrels and existing tank systems. StaVin represents Sansaud three-year, air-dried traditionally coopered French oak barrels.

Tonnellerie Sansaud is a family-run cooperage in Segonzac, France for 70 years. Gerard Sansaud operates his cooperage with the highest level of integrity



StaVin's Modular Tank Unit
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and remains a traditionalist while striving for perfection in producing every barrel.

Sansaud insists on important rules that apply when delivering a high quality French oak barrel: 1) oak origin, 2) seasoning location, 3) seasoning duration, and 4) toasting methodology. The oak is tight grain coming from the Center of France. Maintaining strict rotation methods, Sansaud carefully manages stacks of staves for precise air flow and uses summer irrigation to ensure consistent, high-quality seasoning. Toasting is done with smokeless French oak basket open fires. By using exact time and temperature parameters, Sansaud maintains thorough heat penetration in the staves.

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For more information, contact: **Seguin Moreau U.S.A., Inc.**, 151 Camino Dorado, Napa, CA 94559, tel: 707/252-3408, fax: 707/252-0319

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As more cooperages begin to experiment with American oak, ISC leads with decades of experience and an eye for technological enhancement of traditional techniques. The standard 225-liter barrel was redesigned in 1992 to reflect the traditional Burgundian profile, featuring a larger bilge and longer chime for easier handling and enhanced appearance.

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In addition to research at the cooperage, ISC is actively involved in experimental winemaking in the premier growing regions of California. Each year, ISC works with winemakers to produce wines to showcase the diversity of character derived from various toast levels (seven), air-drying times (from 12 to 30 months), and stave treatments (planed versus unplaned interiors).

In 1994, ISC introduced a barrel renewal system for older barrels, and a tank stave system, which are also experiments. Wine samples made with ISC oak chips, both French and American, are also available.

World Cooperage Company, the wine barrel sales and service division of Independent Stave Co., has offices in Napa Valley and Adelaide, Australia, and employs a staff with both wine and barrelmaking experience.

For more information, contact: Missouri office, Ed Larmie or Christina Fugitt, tel: 417/588-4151; Napa Valley, Bill Monroe or Craig Thornbury, tel: 707/644-2530; Australia, Joe Bechtold, tel: 8-295-5916.
Please see our ad, page 20.

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Tonnellerie Francaise was formed in 1980 to satisfy the demands of winemakers for American oak barrels manufactured in the "old traditional French-style coopering," as well as continue the importing of French oak barrels from Bordeaux and Burgundy.

Tonnellerie Francaise markets three different producers of French oak cooperage:

1) **Tonnellerie Ludonnaise** in Bordeaux has shipped barrels to the California market for over 25 years. Chateau, Chateau Ferre, Transport, etc. styles are manufactured in Bordeaux, France. This cooperage is the classic. All forests are available.

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For more information, contact: Duane Wall, **Tonnellerie Francaise**, 1401 Tubbs Lane, Calistoga, CA 94515, tel: 707/942-9301, fax: 707/942-5037.
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FP PACKAGING

Tonnellerie Chalufour of Jarnac (Cognac), France was founded by master cooper Serge Chalufour. Dedicated to maintaining the tradition of old world craftsmanship, Serge personally oversees every stage of production which bears his name.

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As a small cooper, Chalufour prides himself in the ability to produce barrels to an individual customer's specific requirements. Mature stocks of wood are maintained from France's major oak growing forests including: Allier, Nevers, Vosges, Troncais, and Limousin.

Barrels can be produced in all shapes, including Bordeaux export, Chateau and Chateau Ferre, Burgundy, 300-350 liter Cognac, 500 liter puncheon, and larger custom ovals and uprights. The level of toast may be specified. Custom features available by request include toasted heads, special hoop location (to accommodate storage rack configuration), custom bung-hole sizes, etc.

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PICKERING WINERY SUPPLY

The individual characteristics of the two separate coopers, Vernou and Treuil, have become more apparent now that they have been on the American scene for two years. Although they have joined together for their export program — and despite similar wood sourcing, ageing and careful workmanship — each cooper offers the winemaker unique made-to-order barrels.

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Vernou's experience apprenticing at virtually all the important French coopers: 1) A "Chardonnay" Burgundy barrel with three different woods and a slow house toast and, 2) an "Early White" Bordeaux barrel of similar woods, but prepared and toasted differently. The latter barrel is for Semillon/Sauvignon Blanc and other varietals that do not need too much oak but, instead, are usually ready in six months or so. White Meritage is another perfect wine for these barrels.

Treuil is a supplier to both the Bordeaux and Burgundy regions. Treuil has the unique ability to make barrels that are all-but-identical to the largest Burgundy cooper but at more competitive prices. This cooper has won followers to its straightforward and dependable toasting for Bordeaux-style wines as well.

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For more information, contact: **Pickering Winery Supply**, 888 Post St., San Francisco, CA 94109 tel: 415/474-1588, fax: 415/474-1617.

Please see our ad, page 43.

DEMPTOS NAPA COOPERAGE

In 1820, Tonnellerie Demptos began coopering premium French oak barrels for the chateaux of Bordeaux. By 1982, Demptos Napa Cooperage started providing winemakers with traditional French oak barrels of Export styling from the forests of Nevers, Allier, Troncais, Vosges, and Limousin, crafted in America.

As of January 1994, the Francois family of Tonnellerie Francois Freres completed purchase and operational control of Tonnellerie Demptos and Demptos Napa Cooperage. We are now confident that both Tonnellerie Demptos in Bordeaux and Demptos Napa Cooperage in California will supply some of the finest barrels in the world today.

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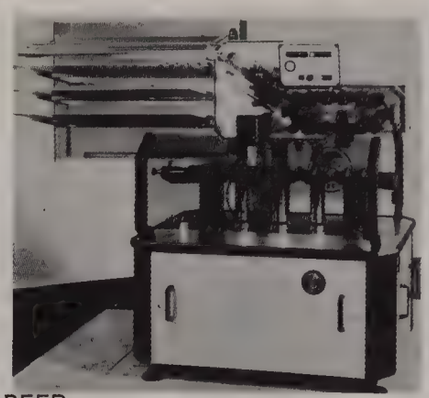
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Inquiries to: Mark Heinemann, **Demptos Napa Cooperage**, 849 Jackson St., Napa, CA 94559, tel: 707/257-2628. **Please see our ad, page 27.**

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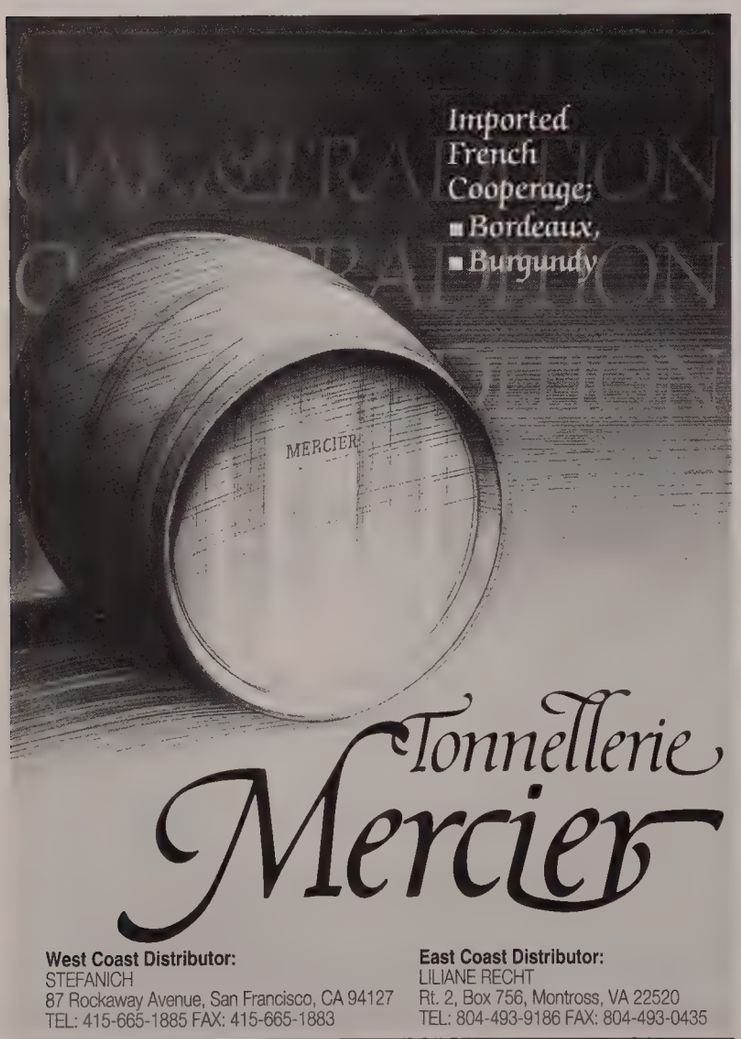

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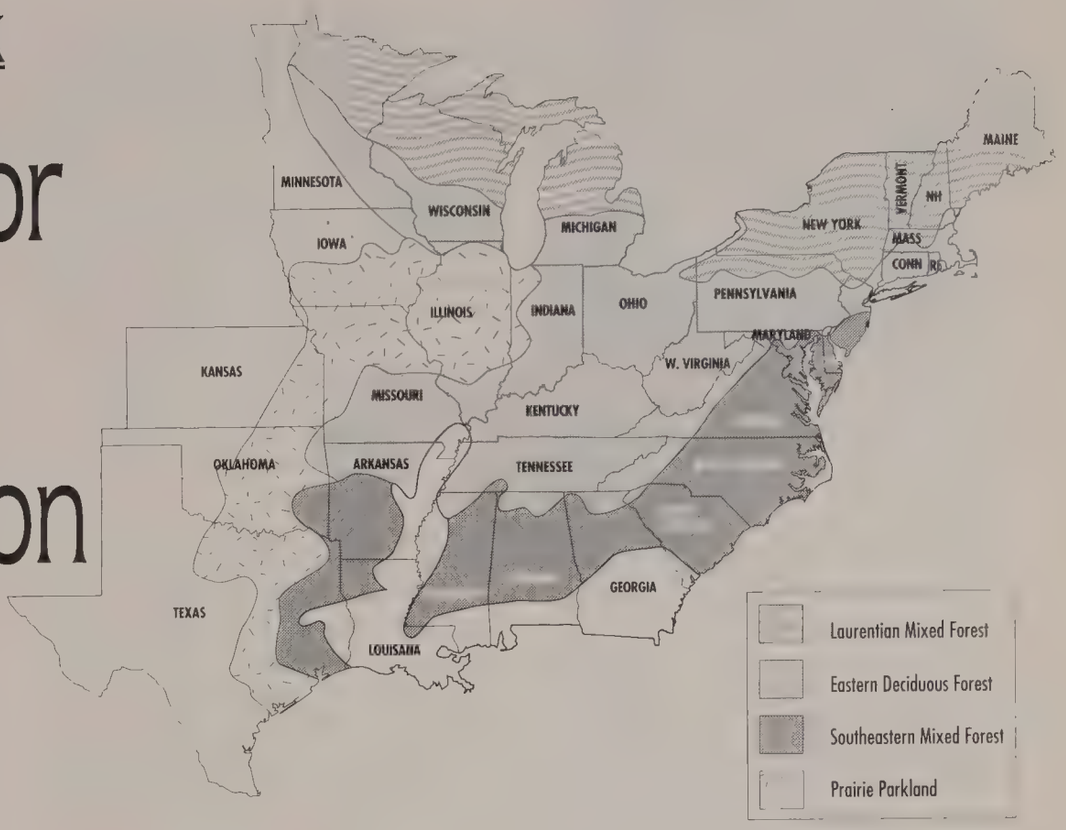

by Dave Miller and G.S. Howell
Michigan State University,
East Lansing, MI

The surge in popularity of Chardonnay and other barrel-fermented white wines has led to changes in winemaking. Fermentation in stainless steel, producing clean, dry or off-dry wines was sufficient during the 1960s and 1970s. But this approach does not offer the level of flavor complexity increasingly demanded by more sophisticated wine consumers in the 1990s.

"Chardonnay" has replaced "Chablis" as the nearly generic term for a dry white wine ordered at a restaurant (similarly "Cabernet" has replaced "Burgundy" or "Claret" for red wines).

Most consumers have come to associate the flavor imparted by fermenting and/or ageing Chardonnay in oak barrels with the inherent flavor of the grape and thus with the name "Chardonnay." In other words, Chardonnay is not Chardonnay to most enophiles without the oak character. Similarly, a demand has been created for wood flavor in many other white and most red wines.

This demand for barrel-fermented or "oak" character in wines has resulted in an increasing demand for oak barrels by wineries. Most of these barrels are made in France of French oak, but increasingly, U.S. vintners are looking to American white oak as potentially a less expensive option. The question is: Can American white oak match the quality of French oak? At Michigan State University (MSU), we have begun studies to answer this question and to determine if regional designations should be instituted for white oak in the U.S.

French versus American oak

In France, special designations indicate forests where oak has been cut for centuries to produce containers for wine and spirits. There are no less than five separate areas in which barrel wood is harvested. The differences among such barrels are related to the site of origin, since all are of the same species (*Quercus robur* L. or *Quercus sessilis* L.), although other factors — such as climate under which stave wood is cured or toasting during barrel production — can also have significant impact on flavors.

On this side of the Atlantic, the sources have only been exploited much more recently. Barrels of American white oak (*Quercus alba* L.) were originally produced for the bourbon industry. In fact, the flavor of bourbon is largely comprised of oak flavor compounds.[3,5,10]

However, *Q.alba* barrels are finding their way in ever greater numbers into wineries. Top quality *Q.alba* barrels currently cost about $250 while their French counterparts cost approximately $550 (depending upon current exchange rates).

The obvious question is: "Why buy French barrels at all?" Though many opinions have been expressed, it has been generally thought that *Q.alba* did not impart flavors as refined as those of *Q.robur* or *Q.sessilis*.

Recent research, however, suggests that red wines aged in barrels of the three species, coopered with the same techniques, were not perceived as different after about nine months of ageing.[1]

Conversely, when a white wine was used and different coopering techniques were employed, the wines were found to be different but there was a shorter ageing period than that used for the red wines.[14] The results of these studies are interesting and shed light on the issue, but in every study comparing American and French oaks, there has been at least one uncontrolled variable (e.g. site of origin, stave wood curing, or coopering technique). So the question remains: "Is French oak better than American oak?"

Defining differences in oak flavor

In order to define those differences in oak flavor which exist only because of species or site differences, it is first necessary to control all other variables which may influence oak flavor.

From published research, we know that species,[6,7,11] site,[5,11,13] toasting time,[9] and temperature,[5] the climate in which the staves were cured, and time of stave curing[5] can all influence the flavor composition of the wood.

However, as mentioned above, all studies to date comparing the two species have failed to control at least one of the variables. In every study, the *Q.robur* was grown and the staves cured in Europe while the *Q.alba* was grown and cured (if it was cured and not kiln-dried) in the U.S.

One may argue at this point that this is an academic question. Anyone can taste bourbon and know American oak right? We do not think so.

Numerous coopers have conducted research and found that tight-grained *Q.alba*, split, dried in open air, and toasted over an open fire using the same techniques used to cooper *Q.robur*, produces barrels with excellent flavor characteristics.

These findings are leading to a growing sense of excitement among some winemakers. There is a relatively inexpensive barrel source right at hand, but there still remains a difficulty. The eastern U.S., the primary source of *Q.alba*, is roughly three times larger than France yet there are no good data to define appellations or regions for oak in that vast area.

Eco-regions

There is good reason to believe regions exist which support white oak stands of unique characteristics in the eastern U.S. The French oak forests all exist in the same climatic zone[8] or eco-region.[15]

The white oak forests of the eastern U.S. exist in four eco-regions.[2] Climatic zones are determined by mid-winter temperature minima, summer heat accumulation, length of growing season, and the amount and distribution of precipitation. These factors determine the types of plants which will exist in the climax community.[15]

Soil composition can influence plant composition, but it is not a factor in determining eco-regions or the type of plants which will grow in an area. In fact, local climate greatly influences the nature of the local soils (e.g. saline soils in arid climates).

The French forests lie in a zone which is characterized by a humid, continental climate and a cool summer (also known as a Koppens Dfb zone).[15] The major portion of American white oak grows in the same type climatic region. This area is defined as the eastern deciduous forest.[2] It extends from Tennessee in the south to Wisconsin, mid-Michigan and mid-Pennsylvania in the north; from south-central Missouri and north central Arkansas in the west to central North Carolina and Virginia and as far as the

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Atlantic coast in New Jersey to the east (See map on page 53). Given the extent of this region it seems likely that a number of unique oak production regions exist. The remaining climatic zones[2,15] where white oak is found in the eastern U.S. are:

1) The prairie parkland (central Illinois, Iowa, western Missouri, and eastern Texas);

2) The Laurentian mixed forest (New York, New England, upper Michigan and Wisconsin, and Minnesota);

3) The southeastern mixed forest (central Mississippi, Alabama, Georgia, the eastern Carolinas, and Virginia).

The potential for white oak production in each of these regions is limited but for different reasons. At one time, the prairie parkland region supported stands of oak and hickory interspersed with grass. However, much of the timber was removed in this region with the expansion of farming in the earlier part of this century.

The Laurentian mixed forest by contrast, supports oak but as a sub-dominant climax species. This means that the proportionate quantity of oak trees in a given timber stand will not be as great as in stands where oak is a dominant.

The southeastern mixed forest is not as large as the eastern deciduous forest but significant stands of oak-pine and oak-hickory climax can be found there.[15]

Keep in mind, however, that these are broad regional classifications. It is probable that sites exist within these regions which support timber stands that are more like those characteristic of adjacent regions. In any event, the climatic zones provide a broad classification, each of which may contain sites supporting white oak with unique qualities.

A few coopers are now offering *Q.alba* barrels from oaks grown in climatically different areas of the eastern U.S. However, there has been no concerted effort to define these regions. It seems crucial to begin defining regions producing *Q.alba* wood with unique physical and chemical properties — and thus producing unique characteristics for wine cooperage.

For a region to be designated unique, it must meet several criteria:

1. The combination of geography, climate, and soil must be unique to the point that it suggests an impact on plant growth.

2. Preliminary analysis of oak flavor compounds from barrel ageing studies or analysis of wood samples should show differences that are measurable using current technology or are significantly different in taste tests, or — preferably — both.

3. The designated area must be large enough to allow carefully managed, sustained harvest of *Q.alba* so that once a market is developed, it can be supplied.

The effort then will be to decide where to place the boundaries between the various regions since they will likely grade into one another.

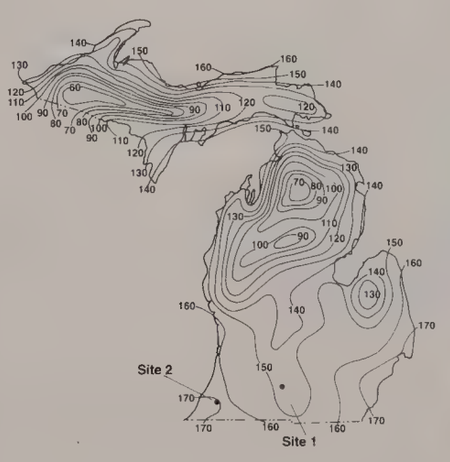
MSU study

Toward this end, we have initiated research at Michigan State University (MSU) aimed at laying the groundwork for identifying and characterizing these regions. The first step in this work has been to determine the influence of site and species on the content of phenolic acid and aldehyde flavor components of *Q.alba* and *Q.robur* while controlling other potential flavor influences. Our first effort was designed to determine if differences exist between oaks harvested from two sites in Michigan.

We chose these two sites because they each had both species of oak in which we were interested. We do not suggest that these are commercial sources of oak or, for that matter, that commercial stands of stave-quality oak exist in Michigan. This must be determined by the cooperage industry if there is sufficient interest.

We began with two trees each of

Figure I



Location of Sites One and Two in Michigan's lower peninsula. Isotherms indicate length of mean frost-free season in days.

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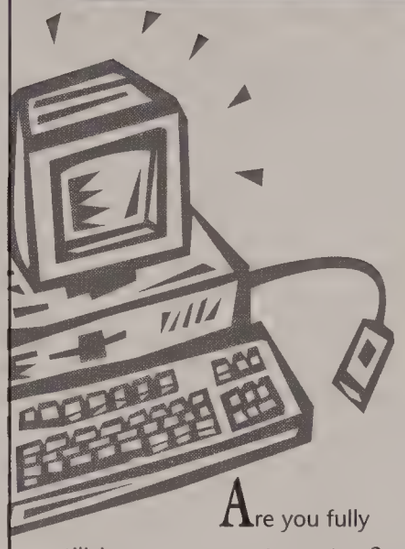

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Q.alba (50-60 years old) and *Q.robur* (30-40 years old) cut from two climatically different sites in Michigan (Figure 1). Site-2, situated nearer Lake Michigan, has a more moderate, maritime climate. It is also characterized by lower precipitation during the growing season and somewhat droughtier soil conditions produced by a hardpan.[11] While the forests used for the study would not be sufficiently large enough to allow sustained timber harvest, they served our purpose for comparing the two oak species from two different sites.

The trees were cut into logs (1.3m long), sapwood discarded, and remaining heartwood sawed into 17mm thick planks which were kiln-dried to about 12% moisture at 43°C. These were further processed by chipping in a hammermill to produce chips averaging 2cm in length, with width and depth each averaging 7mm. These chips were extracted using a model solution of 55% ethanol and acidity of 7gm L-1.

The extracts were separated into individual phenolic acids and phenolic aldehydes using HPLC and quantified using a UV-detector at 280nm. Results of these analyses appear in Table I. As can be seen, species had the largest effect on the absolute and relative quantities of these compounds.

While site did have some effect, its impact was not as great as the species impact. To further determine if the differences in these analyses actually had an impact upon the perceived flavor, untoasted chips of each oak were added to a dry white wine. The wines so produced were then subjected to triangulation tastings by a trained panel. The results showed that tasters could always discriminate between *Q.alba* and *Q.robur*. In addition, they could discern differences between *Q.alba* from sites #1 and #2, but not *Q.robur*.

The tasting results are interesting because they suggest that: One, there are interactions between the various flavor components,[10] since the measured differences in individual flavors was not large from site to site; two, some unmeasured compound(s) may be responsible for the differences in flavor perception; or three, a combination of one and two.

Whatever the cause, these taste differences are real. The lack of significance between the two sites for *Q.robur* suggests that this species may require a greater difference in site before flavors are affected.

In the next phase of our research, we will compare a larger number of sites with a greater range of climate. (Keep in mind that our future work will be restricted to *Q.alba* since *Q.robur* is not native to North America. The opportunity to do the current work was presented to us by Dr. Don Dickmann in the MSU Dept. of Forestry who had access to *Q.robur* planted in the state some 30 years earlier. We are deeply in his debt.)

We feel confident that there are regions in the eastern U.S. which produce *Q.alba* with unique characteristics. We hope to elucidate these regions so winemakers will have more cooperage choices in the future.

During the preparation of this report, it has been suggested that the utilization of new American oak sources, which may be distant from current stave mills, will increase the cost of American oak barrels. While it is true that there may be increased costs associated with shipping oak over greater distances, the current sources of oak should not be affected by this.

In addition, even if there were slight cost increases for some oaks, it seems unlikely that those barrels would approach the cost of French oak barrels. If large stands of high-quality wood are found and demand is high, it is possible that new stave mills would be built in close proximity to these sources.

Table I
Content of phenolic acids and aldehydes in extracts of oak chips from *Q. alba* and *Q. robur* grown on two sites in Michigan. Concentrations are in µg/gm of chips except for total phenols which is in mg/gm.

	Gallic acid	Vanillic acid	Caffeic acid	Syringic acid	Syring-aldehyde	Vanillin	Ferulic acid	Sinapic acid	Total Phenols (mg/gm)
Species									
Q. alba	159.3 b	11.5	2.5 b	25.2	6.0	22.0 a	77.3	9.7 b	11.8 b
Q. robur	1271.5 a	29.2	15.7 a	18.8	12.7	13.7 b	82.0	22.8 a	35.3 a
Significance	****	NS	**	NS	NS	*	NS	**	****
Site									
One	447.3	24.7	7.8	24.7	7.5	18.7	67.3 b	11.2 b	20.6 b
Two	983.5	16.0	10.5	19.3	11.2	17.0	92.0 a	21.3 a	26.5 a
Significance	NS	NS	NS	NS	NS	NS	*	*	****
Interactions									
Q. alba									
Site one	218.8	19	2.3	44.5 a	4.3	23.8	44.2	9.7	8.7
Site two	99.7	4.2	2.8	5.8 b	7.7	20.3	110.3	9.8	15.0
Q.robur									
Site one	675.8	30.3	13.3	4.8 b	10.7	13.5	90.5	12.7 b	32.5
Site two	1867.3	27.8	18.2	33.0 a	14.7	13.8	73.7	33.0 a	38.1
Significance	NS	NS	NS	*	NS	NS	NS	*	NS

Means followed by the same letter in a column are not significantly different at the .10 (*), .05 (**), .01 (***), and .001 (****) levels of significance.

What's next?

While, our crystal ball does not allow us to predict all possible outcomes, we can see that regional designations for American oak would give winemakers more choices and greater control in matching barrels of this wood with their winemaking styles.

Many wineries are taking a serious look at including American white oak in at least part of their barrel fermentation and/or ageing program. The development of consumers who now identify American oak flavor and find it desirable suggests that the next step is regional definition. Variance in flavor components from such regions likely offer the winemaker new opportunities for creating unique character in their wines. Such a prospect is exciting and suggests a potential for refinement of an already fine quality product. ■

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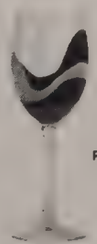

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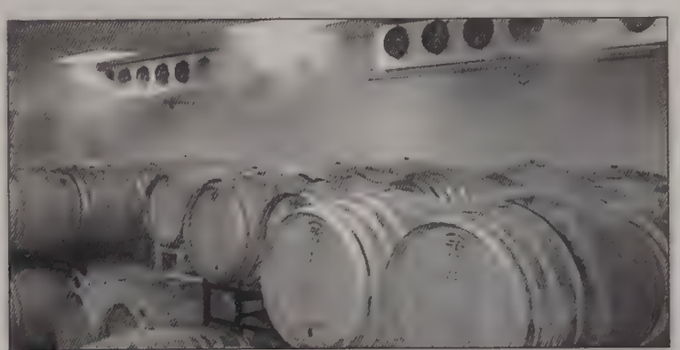

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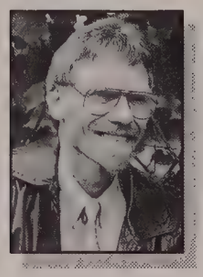

By Dr. Richard Smart

World's best vineyard practices

My consulting work takes me to many countries of the world as well as North America. The benefit of so much travel to different vineyards is that I am able to make *real time* comparisons between different vineyards, and their managers' techniques and attitudes.

From this perspective, I want to try and define some of the *world's-best vineyard practices*, so that we might discuss the question: How do Californian vineyards compare on a global scale?

International wine market

One might ask, "Does this comparison really matter?" I think so, because the world wine market is becoming increasingly international. Most of the countries where I consult are increasing their plantings to meet their perceptions of a growing export market. Such producer countries include Chile, Argentina, Australia, New Zealand, and South Africa, and to a lesser extent, some producers in Spain, Portugal, Italy, and France.

While many of these countries are developing export markets in Europe, especially the United Kingdom, many are also looking toward North American sales. This is becoming increasingly apparent in American wine stores, as international firms compete for shelf space. Some producers are now conscientiously building brand image in the USA.

Where do California producers fit in all of this? Most concentrate on the domestic market, although a few companies are becoming increasingly export-oriented. I think that, as time progresses, more and more California producers will need to be concerned about being ***internationally competitive***, if only as a means of maintaining domestic market share against international competition.

Definition of some world's-best vineyard practices

Site selection — The first consideration of vineyard establishment is vineyard site selection. We ask: Is the climate suitable for producing the wine style at the price point required?

In this regard, California is well served by a very large range of climates able to match those of most winegrowing regions of the world. Being dry, the climate is also relatively safe from a fungal disease viewpoint. California is also fortunate with regard to land availability. There are large areas of land available which are relatively cheap and flat. This is particularly the case for land not currently used for vineyards. Of course, land prices in the best known viticultural regions such as Napa and Sonoma valleys are inflated, even by international standards.

California is also well supplied with generally good quality irrigation water, available in large quantities. Another feature of California is that any new vineyard area is typically well supplied with services such as transportation, communication, proximity to wine processing facilities, and consumer markets.

In the New World, including California, there is less emphasis on soil effects on wine quality than there might be. However, this situation is changing, and I am sure, in the future, there will be more emphasis given to selecting soils found desirable from a wine quality viewpoint.

I think, particularly of those light textured sandy soils often containing gravel or stones, which have low water-holding capacity and good drainage. Such soils are common, for example, in the Santa Maria area of California and should be priority soils chosen for vineyard planting. For the majority of Californian vineyards, deep, fertile and heavier texture soils are often used for viticulture; such soils tend to be less highly regarded from a wine quality viewpoint.

Planting material — We can also compare the availability of improved planting material between California and the rest of the world. In this regard, California does poorly. It has available for commercial use only a limited range of rootstocks and experience with them is especially limited. Sadly, such information takes many years to acquire, and it would be fair to say that California lags many decades behind other wine producing regions, especially Europe.

The situation is not much different for clones of important wine-grape varieties. Rigorous clonal evaluation in California is less than one or two decades old, compared to almost a century of experience in some European countries. German clonal selectors are now into their third generation of selection within one clone! Interestingly, Australian researchers probably know more about the performance of many UC-Davis clones than is known in California. That is because Australia has been undertaking evaluations of these clones for the last 20 years or so, whereas trial experience in California is much more limited.

California vineyards are increasingly being planted to popular international varieties like Cabernet Sauvignon, Merlot, Chardonnay, and others. However, I wonder if there is sufficient attention being given to those varieties which will become increasingly popular in the next decade or so. I believe that, in the next 10 to 20 years, varieties from Italy, Spain, and Portugal will become increasingly recognized as commercially important compared to their French counterparts which are now so fashionable. I know a few California producers are aware of this possible trend and have done private evaluation.

Irrigation systems — Because of the ready access to international equipment as well as that of domestic origin, Californian grape producers are typically using world's-best irrigation technology. However, few vineyards I visit have world's-best irrigation practices, and in particular, the measurement of soil moisture and irrigation scheduling often leave a lot to be desired. For example, there have been several developments in Australia of soil moisture measurement systems which will provide the vineyard irrigator an opportunity to maximize quality gains and minimize crop losses. I do not want to suggest that irrigation practices in Australian commercial vineyards are necessarily better than those in California.

Trellis systems — Many of my clients are leading the world in terms of their evaluation of new trellis systems which will maximize yield, quality, and mechanization, and minimize disease pressure. However, the majority of California vineyards are poorly trellised by New World standards. Even where record prices are paid for land in Napa and Sonoma valleys, I see the *California sprawl* trellis used again and again with new plantings. Probably the second most common system is the VSP (vertical shoot-positioned) trellis, despite its having been found wanting for high vigor sites in many other countries.

Mechanical harvesting and pruning — Paradoxically, mechanical harvesting and especially pruning are not as widely used in California vineyards as they might be. I say paradoxically because both of these technologies were developed in America (admittedly in New York state, not California) in the 1960s. Now, 30 years later, we see the proportion of mechanical pruning and harvesting to be much higher in Australia, for example, than in America. In fact, many California producers are purchasing harvesting machines now made in Australia and New Zealand!

Spray machinery — In a similar fashion, I see little evidence of the newest European spray technology used in California vineyards. By collecting surplus spray material which does not impact on the target, contamination of the environment is reduced and spray effectiveness increased. I have little doubt that the greatest advance in vineyard machinery in the next 20 years will be in spray applicators and it will not be long before our present generation spray machines become dinosaurs.

Similarly, I am confident that machines that will facilitate shoot-positioning will become more common in the future. Early prototypes of these machines are now being used.

Conclusions

The scores I would give California vineyards on a world's-best scale are as follows:

site selection, 7 out of 10
planting material, 2 out of 10
irrigation systems, 6 out of 10
trellis systems, 5 out of 10
mechanical harvesting and pruning, 5 out of 10
spraying systems, 5 out of 10
shoot positioning, 2 out of 10

Based on their own experiences, no doubt friends and colleagues in California will want to challenge some of my perceptions, but I wonder if my generalizations are not reasonable.

When I began my career in the viticulture industry almost 30 years ago, the vineyards of California could often claim the reputation of world's best from a technology viewpoint. Is that the case in the mid 1990s? This is not to say that vineyards of Australia are much better off than those of California. In fact, some of the most technologically advanced vineyards I see around the world are in Europe, New Zealand, and South America. ■

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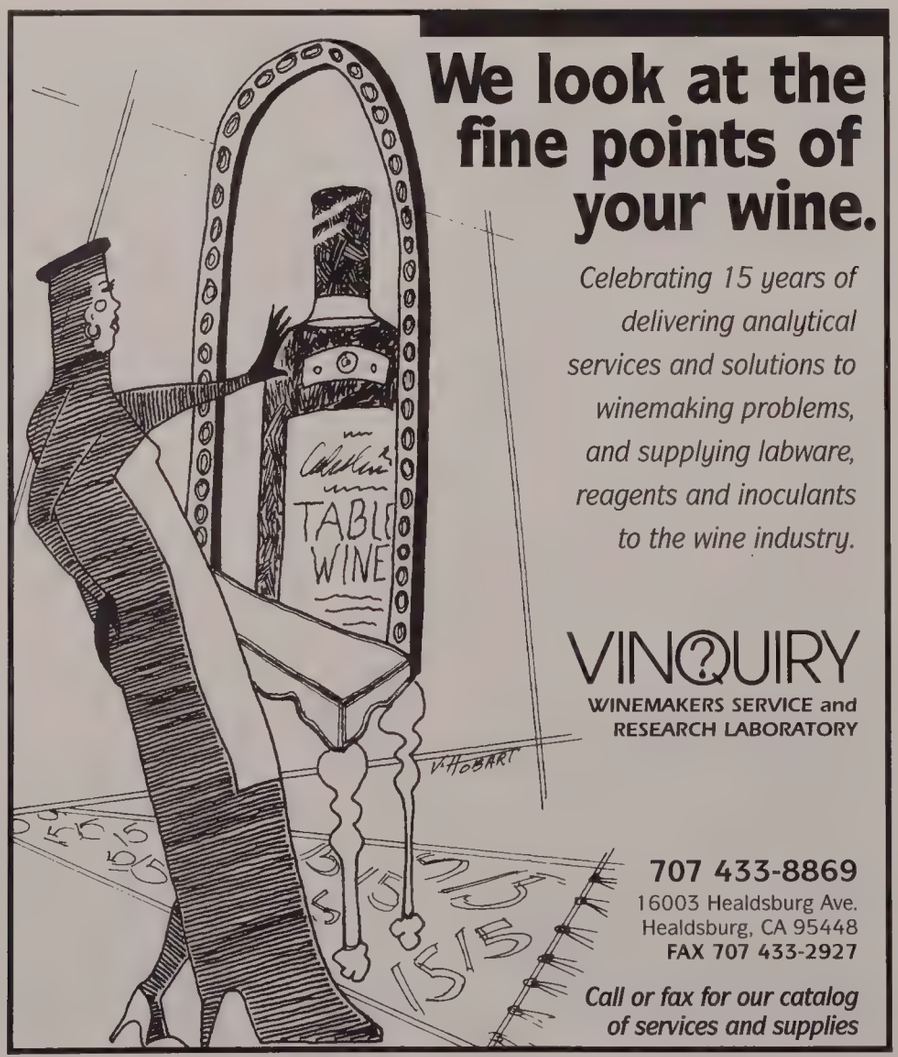

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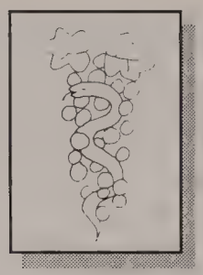

By Dr. Wells Shoemaker

Changing the Emperor's new clothes

Evolutionary stages in the medical policy approach to the healthful aspects of moderate alcohol consumption:
1. Say it ain't so.
2. Say it wouldn't matter even if it were so.
3. Say it might be so, even if it shouldn't be.
4. Say it may be so, but be careful how you say it.

Medical research and medical politics have generated two conflicting medical models of alcohol abuse with widely divergent conclusions. Proponents of these two views confined their tiffs to polite private arguments until the revelations that moderate drinkers live longer than abstainers brought the issue out of the medical closet.

Now the debate has taken to the public streets with two competing entries in the parade: The Emperor's procession and the Clinician's band. The future of the wine industry depends significantly upon which entourage gets the best reviews.

The Emperor's entry is the "Public Health Approach," offering a beguilingly simple model with straightforward action plans, provided one buys its basic assumptions. Beyond the appeal of simple solutions, this model also clearly has the best political title. Almost any fabric draped over the public health frame will be obediently hailed as the Emperor's new clothes by his sycophants.

The Public Health Approach, also known as the *pro-control* approach, postulates that ***all*** drinkers have a liability to become alcohol abusers, and consequently, the greater the number of people drinking, the greater the number of alcoholics. This model further presumes that alcohol abuse is proportionate to *per capita* alcohol consumption.

If one accepts this hypothesis as true, efforts by government to reduce the number of consumers would logically bear fruit for society at some future date. Such efforts include social stigmatization of drinking and "education" of young people that alcohol is a drug. Furthermore, any efforts by industry to increase the number of consumers would be regarded as inimical toward "public health."

While reduction in the number of consumers takes time, perhaps a generation, the pro-control approach promises more immediate results through curtailing *per capita* consumption by restricting availability of purchase (in hours, location, and age group) and elevating prices through taxation.

While wine producers are most familiar with these efforts in the U.S., the model extends far beyond our borders. The World Health Organization has adopted a goal of a 25% reduction in *per capita* alcohol consumption by the year 2000.

The agencies that promulgated the Public Health Approach have spent significant portions of their research budgets to find some shred of evidence to validate their chosen model. Usually, as the saying goes, "Where money aims, research follows," but credible scientific support for this suspiciously simplistic notion remains elusive despite the prodigious investment of tax money and personal energy.

The "Disease" model

The second medical model — the white-coated clinicians' entry in the parade — considers alcoholism an individual problem. A combination of specific hereditary, metabolic, and behavioral traits define certain individuals as either affected by the disease or at high risk.

With abundant yield in this case, a huge federal investment in basic medical research for the last 40 years has expanded medical knowledge of the descriptors of alcohol abuse. This research has clearly succeeded in defining a host of characteristics of alcoholism, from both a molecular and a social behavioral standpoint.

Most clinicians deal with human patients, rather than the statistically-defined social systems of the Public Health approach. The Disease concept allows doctors to tailor therapy for sick individuals, but it also generates gruff realism about the flaws in the Emperor's coat.

Ask doctors who have cared for alcoholics how their individual patients will respond to bureaucratic restrictions on availability, and they will throw up their arms and say that the people who abuse alcohol will find a way to get it anyway.

Asked whether legal threats, billboard insults, and snide comments will influence the behavior of their diseased patients, the same doctors will shake their heads. Such influences clearly affect the behavior of temperate people, but by the very nature of the disease, have little or no effect upon the responses of alcoholics.

The frustrating lack of response by alcoholic mothers to the strident FAS campaigns and the tragic repetition of DUI offenses by alcoholics serve as statistical corroboration to these anecdotal doubts.

Scientific gaps in the Emperor's clothes

Conflict began brewing when powerful epidemiological studies, supported by increasingly precise biochemical research, consistently defined, reaffirmed, and expanded the health benefits of moderate drinking. This cascade of hard science spilled from the medical into the lay literature over the last five or six years rendering the Emperor's handlers increasingly defensive.

When the French Paradox appeared on television, the debate between Public Health camp followers and the Disease modelers deteriorated for a while into a hooting demonstration.

The pro-control forces used McCarthy-esque slurs, accusing certain researchers of being "soft on alcohol." Borrowing equally handily from left wing rhetoric, they declared their opponents to be "either part of the solution — or part of the problem." Clinicians kept conspicuously quiet.

The Public Health paradigm held sway in the medical media, at least editorially, until very recently. Every single article showing some new finding regarding the positive influence of alcohol upon coronary disease, stroke, cholesterol, platelets, and other diseases carried a stereotypic disclaimer, to paraphrase: *"While these findings are interesting, they require further investigation. Meanwhile, it would be irresponsible to recommend moderate drinking because of the pervasive harm caused by heavy drinking."*

Most doctors knew something was wrong with the Emperor's attire. They knew perfectly well that objective scientific comments were not going to provoke healthy, responsible drinkers to suddenly plunge off the deep end.

Doctors with personal clinical experience also knew that alcoholics would continue an unhealthy and dangerous drinking pattern with or without a medical acknowledgment of the favorable aspects of moderate drinking. Furthermore, many of these doctors drink moderately themselves. Yet, they seemed to fear that any public statement, regardless of truthfulness, favorable to moderate drinking would promote and perpetuate alcoholism with its attendant personal and societal miseries.

Why didn't the doctors cry foul? Politics, money, and timidity. Failure to applaud the Emperor's ideological cloak stood as politically incorrect, if not treasonous, behavior. Deviation from the safe posture of adulation was not to be undertaken lightly by academicians in a climate where the flow of research funding came from the same agencies that fabricated the Imperial wardrobe.

Furthermore, the editorial policy of influential medical journals requires harmony with societal goodwill, lest doctors be considered arrogant manipulators of hapless guinea pig patients or callously greedy parasites upon sick people.

Doctors may be accused by some of sheep-like behavior, but they also boast a tradition of a few souls who braved the scientific dogma of their times and took their political chances. It's finally happening in wine and health.

Changing the Emperor's duds

Three of the nation's most influential medical journals, the *New England Journal of Medicine (NEJM)*, the *Journal of the American Medical Association (JAMA)*, and *The American Journal of Public Health (AJPH)* have carried the bulk of the medical reports on moderate drinking and health, with the predictable disclaimers after the predictable good news.

Over the last year, however, all of these journals have demonstrated a definite new respect for the Disease model. The *NEJM*, in late 1993, published the definitive article regarding HDL effects of alcohol, ascribing half the coronary protective effects to this mechanism. The accompanying editorial, co-authored by world renowned coronary researcher Arthur Klatsky, called for the replacement of categorical "Don't drink" advice with an *individualized* endorsement based upon thoughtful medical assessment of comparative risks. The editorial did not suggest proselytizing abstainers to become drinkers.

In late 1994, *JAMA* carried a breakthrough report showing increases in t-PA, a clot-inhibiting enzyme with short-term coronary protective effects, lasting one day after moderate alcohol consumption. This effect, synergistic with the inhibition of platelet clumping by red wine compounds, helps explain the earlier observations that heart attacks are rare within 24 hours of drinking moderately.

The short-term coagulation inhibition further explains the statistical advantages of cultures with regular daily drinking with meals as opposed to cultures with the same *per capita* consumption in concentrated bouts separated by intervals of abstention. (See the Sept./Oct. 1994 **PWV** for a more detailed discussion.)

The accompanying *JAMA* editorial again called for a revision of the peremptory "Just say no to drinking" advice. It cited the scientific evidence that now indisputably supports moderate drinking for individuals at low risk for alcoholism, while again acknowledging the equally undisputed hazards of heavy drinking. *The editorial suggests that doctors should be*

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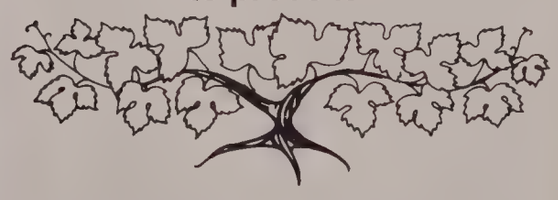
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able to tell the difference between the two, just as they do for every other disease.

Succinctly, the editorial states: "Generalized messages to abstain from alcohol may be no more responsible than generalized recommendations to drink it."

The *AJPH*, by its title a long-standing proponent of the Public Health Approach, published a trio of editorials in 1993 from Harvard researcher Meir Stampfer, British anti-alcohol proponent Gerald Shaper, and sociologist Stanton Peele regarding how to cope with the awkward reality that alcohol is good for the personal health of a majority of people, yet extremely bad for some.

Dr. Peele repeated the observation that Prohibition caused more grief than good to society through its often cited crime-spawning effects. He then went further to contend that contemporary absolutist anti-alcohol approaches may likewise be doing harm, both by isolating suffering individuals and depriving well persons of valid coronary preventive strategies.

Bunker mentality

Dr. Peele called for a public policy willingness to tell the truth about alcohol and health, rather than hunkering down to defend the Public Health ideology as if it were the Emperor's body and not merely his imaginary clothes.

Perhaps cresting upon the momentum of these changes in attitude, Congress, for the first time, mandated research funding specifically to study moderate drinking and its potential medical and cultural attributes. The order notes not only the coronary data, but the antioxidant and nutritional properties of wine in particular.

Before rejoicing in these newly enlightened approaches, however, it's sobering to note the clenched teeth news release from the World Health Organization (WHO) on November 1, 1994, angrily repudiating all of the scientific data on alcohol, wine, and health, citing its in-house "experts" in alcohol abuse. With the desperation of a drowning man, the memo desperately clings to the "alcohol causes a world of hurt" buoy, with no reference to quantities, style of consumption, or cultural context. There is no tolerance for the concept of safe moderation.

WHO exhorts crusaders to scrub the scourge of this toxic, addictive drug from the planet. Lots of people read it.

Conclusion

The scientific investigations of alcohol use (a behavior not likely to be eliminated from human endeavor) will continue, with variable good news and bad news for those who produce the beverages. The moderate use, as well as abuse, of our products will also continue.

Now that the debate has finally begun to rise above the mud of political dogma, people in the wine industry have the opportunity to join the process as partners rather than adversaries to those well-intentioned individuals who want the public to be healthy, happy, and long-lived.

We can use our creativity and energy to make the world better, or we can rub our hands and exploit our transient marketing advantages until some new medical bad news steals it away. Let's join the parade with our eyes open and our clothes on. ■

Dr. Shoemaker is a pediatrician, winemaker, and Scientific Advisor to the Wine Institute. When he wrote this (late in crush) his clothes were purple, but at least he was wearing something.

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By R. Corbin Houchins

What's intellectual about property?

"Intellectual property lawyer" makes a great cocktail party introduction. People think I work on big real estate transactions and read Proust.

In truth I find the reality of intellectual property law more interesting than the popular misconceptions. Working with rights arising from creative effort and responding to (or devising) clever ploys to work around them is a constant challenge. Moreover, the changing relationship between intellectual property and the business of wine offers an excuse to write about two favorite topics in one column.

Traditionally, intellectual property (IP) encompasses patents, trademarks, and copyright. In recent years the law of trade secrets has been fleshed out and made more uniform and is generally included in the IP category. More recently still, collective rights in designations of the geographic origins of goods have been recognized by treaty in a manner that makes them arguably a new form of intellectual property. All five categories have increasing significance for growers and wineries.

Brands and Trademarks

Economically, wine is a marketing-driven business, part of the brand name packaged goods segment. Anything that differentiates one source of processed grapes from the rest of the players has the potential to increase the price of the distinctive goods above the commodity level.

Wine is probably the packaged goods product category most affected by brand proliferation. Thus, distinguishing marks that make a product stand out positively on the shelf are a major asset. The combination of symbols that identify the source of the product encompasses not only the brand name, but also other elements of the package, such as label graphics, color, label shape, and in some cases the shape of the bottle.

A hot topic in trademark law, especially since the U.S. Supreme Court decision in a restaurant decor case a couple of years ago, is "trade dress." If a product is successful, a common strategy for an aggressive competitor is to adopt or retain a brand name that is clearly not infringing, but to design the newcomer's package so the consumer pauses and notices the similarity to the over-all appearance of the established brand. Legality of the practice, known as "knocking off," is much debated.

The theory of knock off packaging is that the consumer will not be confused as to origin, but the goods will be perceived as substitutes for one another and the buyer's attention will be arrested just enough to receive the label message (lower price, whatever) from the invader. The recent Supreme Court decision makes it easier for the owner of the senior package design to use trademark law against the junior design, so the knocking off strategy may now be more likely to lead to a legal contest of uncertain outcome.

The lesson is that it's important to protect your trademark rights against infringement, and also important to know where the line is if you are going to market aggressively. We've looked at trademarks in some detail in past columns, so I'll leave the topic for now with an exhortation that both wineries and growers with ambitions of premium grape prices should periodically discuss intellectual property aspects of brand strategy with their legal advisors.

The right to copy

People often think of copyright when they come up with a name or a marketing idea. In that situation we look for another IP category, such as an intent to use the name as a trademark. Ideas in themselves are not copyright material. In fact, in most instances the law encourages people to use other people's ideas to foster competition. What, then, *can* be protected by copyright?

Omitting much detail of the kind that delights lawyers, the Copyright Act affords authors, painters, computer programmers, musicians, photographers, and other creative workers the exclusive right to make copies of their original works. Names, slogans, and other short phrases, and ideas of all kinds are not the subjects of copyright because they are not "works" under the Act. Functional articles and functional features of otherwise decorative articles are generally not protected by copyright.

In the packaged goods industry, copyright is encountered most frequently and significantly in labels and advertising. A drawing or an essay is an artistic creation protected by the Act, and the fact that the work has a commercial purpose does not diminish the protection.

The important practical message is to be aware of two frequently overlooked pitfalls in package design: First, paying an artist for a label design does not necessarily give you the right to make copies of it (*i.e.*, print any labels). Second, a promise from an artist that the design is original (and therefore not an infringement of someone else's copyright), even if in writing and clearly drafted, protects you against a later claim of copyright infringement only if the artist can be found and is able to reimburse you for the damages. The same principles apply to original literary work on labels or in ads.

Trading in secrets

Protection of trade secrets, or proprietary information, is another topic we've examined before. It's the basis of the well-known Kendall-Jackson case against a former winemaker and should be the means by which growers and wineries protect their customer lists and know-how.

If you have a method of doing things or a compilation of information not generally known (but not necessarily exclusive), and it helps you competitively, and you make reasonable efforts to keep it secret, you have statutory rights that

can impede the recipients of unauthorized disclosure from profiting from it. By the same token, you have to take care with nifty information that comes your way from outside sources, lest you find yourself infringing someone else's trade secret rights.

Indications

Recent international agreements introduce obligations on national governments to respect an exclusive right of producers located in a geographic area associated with certain goods to use designations that indicate origin in that area. The protection is separate from whatever laws may exist to establish appellations of origin.

It is too early to tell whether there will be any practical effect on the wine industry, but it looks now as if treaties respecting indications of origin would forbid national recognition of both brand names and wine appellations that may mislead as to the real location of the producer.

Temporary monopolies

Our federal constitution makes several interesting references to the world of business. As you have probably heard, it mentions one article of commerce by name ("liquor" in the 18th and 21st Amendments). Although it enables the federal government to pass laws against monopolies by granting Congress the right to regulate interstate commerce, the only specific references to monopolies are somewhat approving.

Among the powers granted Congress is the granting of monopolies for a limited time to artists and inventors, in order to encourage the production of art and useful articles. The monopoly for artists (construing the term liberally) is the exclusive right to make copies of their work, as noted above. For inventors, the monopoly is on the manufacture, sale, and use of the invention and is known as a patent.

Patents are not a frequent topic of discussion at wine gatherings. We tend to think of the production process as artistry in a traditional vein, rather divorced from technical innovation. On the other hand, if you look around, you see patent notices on valves, pumps, filters, trellis tensioners, tractor accessories, and many other tools of the trade.

All the patent statute requires is that an invention be useful, novel, and not obvious to a person skilled in the relevant art. Any new and useful solution to a problem that has an element of the light bulb going on — even a very quiet "Eureka!" — might give the inventor the leg up of a legal monopoly for a period of years, usually 17.

Patents can be issued for new plants and for new microbes or compounds affecting chemical reactions (*e.g.*, an enzyme that facilitates complete fermentation of uncooperative carbohydrates). There is also a separate form of patent for novel designs that could protect, for example, a new ornamental design of wine bottle.

Many obstacles lie between conception of the invention and the granting of a patent, not the least of which is the considerable cost of filing and prosecuting the application in the Patent Office. Utility patents, which are the type relevant to devices and processes, take an average of a year and a half to obtain. "Patent Pending" is not legally significant; a pending patent application provides no protection. With reference to a couple of other popular myths, you cannot patent an idea for an invention, but it is not necessary to make a working model or prototype, and you do not protect an invention by describing it in a letter mailed to yourself.

The practical considerations are that anyone producing a product that involves complex steps should be on the lookout for patentable processes or devices. On the other hand, as a case I recently was involved in showed, a winery whose new employee wants to construct a useful cellar device he learned about at another winery should look out both for trade secret and for patent protection before proceeding. ■

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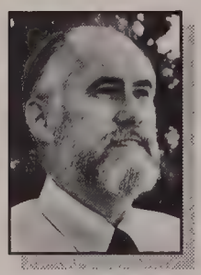

By D.R. Storm, PhD, P.E.

Soybeans in Your Fuel Tank?

Smoke-belching diesel buses and long-haul trucks may soon be exhausting a tastier emission reminiscent of French fries or popcorn. Take the oil that is extracted from soybeans, remove the glycerin, and voilà, soy diesel is ready to power your tractor, boat, or Mercedes 300DL. The only differences you will observe over conventional petroleum-based diesel are:[1]

- *higher price (1994 price levels) of $4/gallon; prices are expected to fall as demand increases and glycerin extraction methods are fine-tuned.*
- *slight improvement in engine performance;*
- *reduced engine wear (soybean diesel has superior lubricity — almost 50% more than the current low sulfur diesel that is available to highway vehicles and boat owners); and*
- *no air polluting ingredients in the exhaust from soybean diesel (no sulfur compounds, soot, benzene, or hydrocarbon-like aromatics).*

Because of the apparent damage to existing diesel engines (destruction of fuel system O-rings and seals and reduced lubricity for moving parts) from the low-sulfur fuels now mandated by the U.S. EPA, in my opinion, the marketplace is going to embrace soybean fuel as a very acceptable alternative to conventional diesel.[2]

If you are a stock market watcher, keep an eye on soybean futures, as this tale of timely biotechnology in action unfolds and the soybean market begins to react to what could be an enormous worldwide demand.

In the San Francisco Bay Area, soy diesel can be purchased at ***Cytoculture****, 249 Tewksbury, Pt. Richmond, CA 94801 (tel: 510/233-6660, fax: 510/233-3777).*

How water softener-brine discharges affect your septic tanks and leach fields

In areas with so-called hard water (greater than 250 mg/l of calcium or magnesium carbonate), ion-exchange water softeners are often the choice to reduce sanitary fixture staining and to make soaps and detergents more efficient cleaning agents.

The impact of brine discharges is also important for winer-

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ies, which in addition to softener brine, may have high-salt content discharges from evaporative cooled condensers that are part of the winery's primary process cooling (refrigeration) system.

Among sanitary engineering design professionals, there has always been a difference of opinion on whether softener brine discharges impaired anaerobic digestion processes in the septic tank and/or contributed to reduced permeability in the leachfield soils. Two separate studies were undertaken to answer the questions concerning the effects of brine on soil absorption-type waste treatment systems.[3]

The salinity of the brines used in the referenced research contained 1,500 mg/l of sodium chloride with a total volume of 50 gallons which matches the generally accepted volume of brine discharged for each residential installation, "zeolite resin regeneration cycle."[a]

The studies concluded that there was no measurable adverse impact either on septic tank treatment efficiency or on the permeability of the soils in the leach field. The only negative effect was the increased hydraulic loading from the 50-gallon discharge per regeneration cycle (described above).

The researchers also noted that, in areas with very hard water (more than 400 mg/l calcium or magnesium hardness), the more frequent regeneration that results (say four to five cycles per week) might hydraulically overload both the septic tank and leach field if the designer failed to take into account the softener discharge or the fact that the softener might be added at a later time after the septic system was designed.

The report cites the reason for no adverse change in soil permeability in the leachfield as probably being due to the large concentrations of calcium and magnesium which apparently countered the clogging effects that the sodium-ion generally has on clay soils.

The researchers agree that there is a negative effect on ground water resources from the portion of the extra salt load that percolates deeply to underlying aquifers. They also conclude that the alternative of diverting the brine to a natural surface drainage course or to man-made dry wells has a greater potential for environmental damage.[3]

An apparent minority viewpoint was expressed concerning the impact of brine on septic tank performance.[4] The observations were made upon septic tanks in Michigan which received softener brine and the following adverse effects were noted:

- no scum layer developed in the septic tank (should have been four or more inches after four years of operation);
- solids and grease carry-over were noted in septic tank systems which received brine but not in those residential systems that were without water softener units;
- visual observation of the clear wells (the second compartment in a two-compartment septic tank) in the septic tanks receiving brine revealed they were more turbid than those at residences without water softeners; and
- chloride-ion concentrations in the septic tanks receiving brine waste were 1,800 mg/l, and these systems required more maintenance and attention than those that did not receive brine.

None of the researchers studied the effects of brine discharge shock-loadings on the septic tank flora. David Pask, technical sources coordinator for the National Drinking Water Clearinghouse, believes that saline discharges do have negative impacts on the metabolic rates of anaerobic organisms in septic systems.[4]

It appears that, even with the large sums of money spent to obtain answers to the perplexing problem, more research is needed to verify the observations of the minority viewpoints. With shrinking government expenditures at all levels it does not seem that strongly scientific-based answers will be forthcoming. Therefore, caution is the sensible approach in the marriage of septic systems and water softener discharges. Be sure that your septic system designer is at least aware that there may be a problem. ■

David Storm is a consulting civil/sanitary engineer specializing in winery utility systems and is the owner of Winters Winery.

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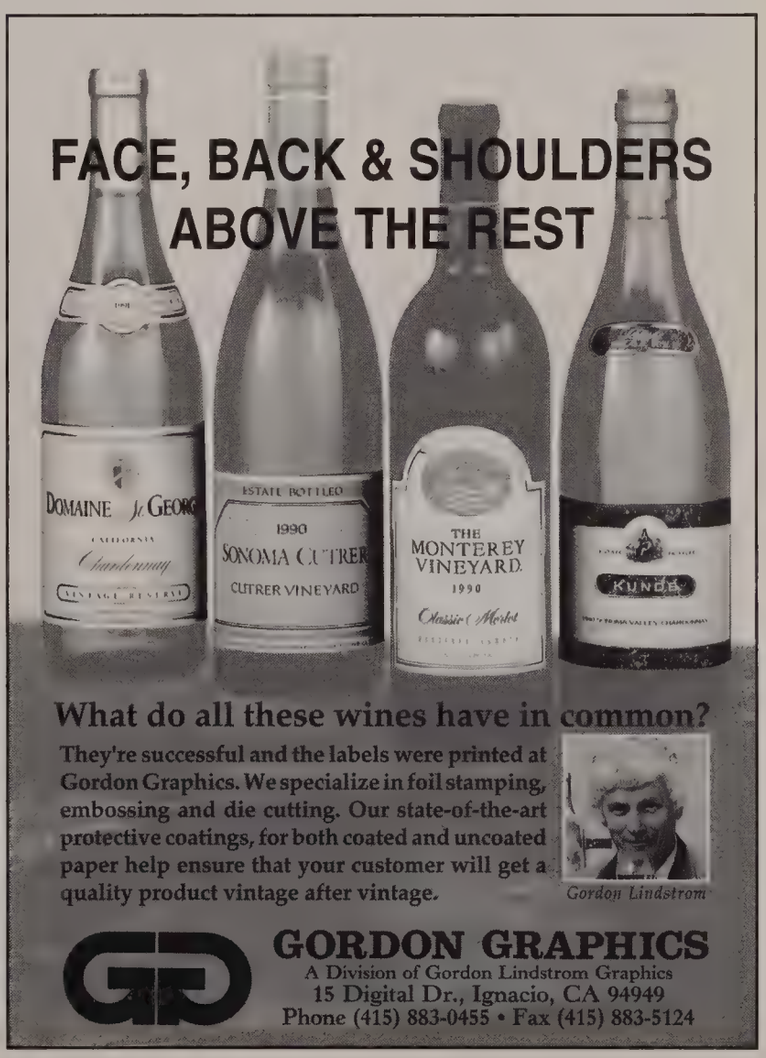
[a] Ion-exchange columns must be rejuvenated by adding a sodium chloride source periodically. The calcium and magnesium ions occupy the sites on the resin formerly held by the sodium ions. Thus, after a period of time, the softening effect from the hard water would be impaired if a sodium source was not used to replace the lost ions.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By Jake Lorenzo

Punish drunk drivers, not Jake

"Carnal," Chuy was saying, "it's time we did something. This thing has gotten out of hand. I've found a way to change it, and I need the *ayuda* of the *muy famoso* Jake Lorenzo."

"Chuy, I'd like to help, but why me? You know how much I hate being in courtrooms."

"You hate being in courtrooms," Chuy screamed. "Mr. Jake Lorenzo, hot shot private eye, hates being in courtrooms. I'm a goddamned lawyer, and I hate being in courtrooms. Why do you think I run this dump of a restaurant? There comes a time, Carnal, when a man has got to stand up for what is right. Surely, Jake Lorenzo won't refuse his good pal Chuy on something as big as this."

Chuy had me, and he knew it. He freshened my cup of coffee and then poured in a slug of Hornitos. He did the same to his own cup, took a sip, leaned back, and with a smile that said, "I've got you by the *huevos*," he added, "Besides Jake, you've gained 15 to 20 pounds over the last couple of years. *Tal vez*, I am saving your life."

Chuy went into the kitchen to get out some orders. I sat sipping hot coffee thinking about the case. I had to admit, Chuy was audacious. His plan had just enough wacky brilliance to slip through our cockamamie legal system. He might actually win.

Chuy, incensed about drunk driving laws, had been looking for a way to challenge them. Chuy feels that 0.1 or .08 BAC levels are arbitrary, and that enforcement of those artificial levels does very little to combat the real problem with drunk drivers. Evidence shows that the most effective way of dealing with drunk drivers, those who cause accidents, is to give stiff sentences for repeat offenders. Get the continual drunk driver off the streets. Get him into a program if possible, but put him in jail if you have to.

On a more personal level, Chuy pointedly and passionately points out that the police seem to be enforcing the drunk driving laws a lot harder against minorities than against anglos. In Sonoma Valley (California), the local newspaper prints the name of each person stopped for drunk driving. They also print the results of their BAC test. More than half of all the names listed each week are Hispanic, even though they represent less than 15% of the valley population.

"Jake, most of mis compadres are very close to the minimum," insists Chuy, "so this is not a case of young single men having a lot to drink. This is la policia pulling over Hispanics having a few beers at a bar instead of Anglos having a couple bottles of wine at a fancy restaurant."

Anyway, Chuy has a plan, and it goes like this: Jake Lorenzo is going to sue the State of California in a class action suit, don't you know? I will be charging that the State of California is knowingly and selectively passing laws aimed at killing me. They have targeted Jake Lorenzo (and all the other people in the state who drink), and they have encouraged me to put on excess weight (using government funds I might add), which could have the net effect of killing me off.

Chuy will be pointing to the Dept. of Motor Vehicles (DMV) as the main culprit. Every time the DMV sends out a license renewal, it includes a chart explaining that added pounds increase your ability to consume alcohol without going above

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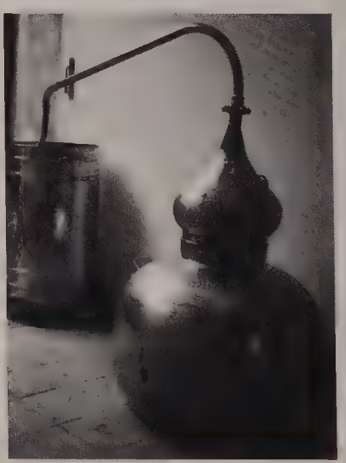

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the state mandated .08 BAC level. In fact, it goes so far as to list different weight categories and then tell you how many drinks you can have.

According to Chuy, this is positive, printed evidence that the DMV (and through them, the State of California), is trying to kill me. "Jake, it makes perfect sense. You are a drinker. You are a driver. You are a law-abiding citizen. The only way for you to morally have a couple of drinks, and then legally drive home is for you to put on added pounds. This, *amigo*, is not *bueno*.

"You will come to the Burrito Palace and eat too many tacos. You will stop exercising. You will sneak *paletas* late at night. You will gain 20 to 30 pounds, just so you can have one more glass of wine, or one more shot of tequila, and still be legal to drive home. You risk early death, *amigo, muerto temprano*. You risk heart attacks, stroke, bad backs, and baldness for all anyone knows. The state is out to kill you, and I'm not going to let them do it."

By now, I'm sure you all wish you had a friend like Chuy.

Not only is Chuy pumped up for this case. He's enlisted the help of Dr. Iggy Calamari, famed inventor of the wine-powered pacemaker, for expert testimony. The good doctor is beside himself with charts, graphs, medical reports, and the like. He plans to show videos in the courtroom of everything from liposuction to open heart surgery to prove that obesity is a killer.

"When I get through with them," according to Dr. Calamari, "they may want a stiff drink, but they definitely will ***not*** be going out for dinner."

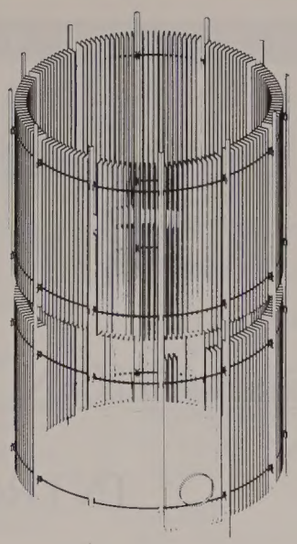
Then Chuy gets going on his conspiracy theory. It's not just the DMV and the State of California trying to kill me. Hell no, the FBI, CIA, and foreign governments are out to make mincemeat of Jake Lorenzo. Chuy's got witnesses, tape recordings, and video tapes. He's got tapes of Governor Pete Wilson where he rails against Hispanic immigrants and threatens to cut schooling and medical care for their children. But when you play those tapes backward, you hear the governor saying, "We've got to kill Lorenzo." True, it's a bit garbled and sounds like something out of the *Exorcist*, but you can hear it if you want to.

Believe me, it gets worse. If Chuy and Dr. Calamari get their way, O.J. Simpson will have to bribe TV cameras and reporters if he wants to get them out of our courtroom.

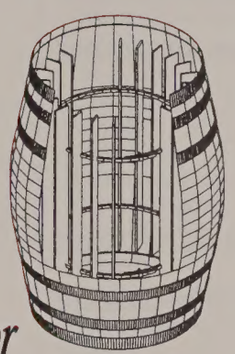
Chuy's got integrity though. He's refusing to take any money from the liquor industry, no matter how much they offer. He's refused to market Jake Lorenzo dolls, detective games or overcoats, (although he said I could sell my book ***Cold Surveillance*** during recesses at the trial.) Granted, all the catering for the television crews, reporters, and the tabloids will come exclusively from Chuy's Burrito Palace, but that's simple business, and it's the only way to assure that we can get tequila in our morning coffee.

There's no telling how this will all turn out. If it starts us on to a more realistic policy regarding drinking and driving in this state, so much the better. If it causes people to think about their rights, and the state's ability to infringe upon them, so much the better. If Chuy's court case forces me to lose my privacy and my ability to come and go in this life without being harassed by every Tom, Dick, and Harry — then there will be one less Hispanic restaurant-owner attorney.

Fortunately for Chuy, Jake Lorenzo is a master of disguise. ■



the barrel saver



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